12-2015

The Impact of Inclusion on the General Education Curriculum

Stephanie L. Hoelper
Indiana University of Pennsylvania

THE IMPACT OF INCLUSION

ON THE GENERAL EDUCATION CURRICULUM

A Dissertation

Submitted to the School of Graduate Studies and Research

in Partial Fulfillment of the

Requirements for the Degree

Doctor of Education

Stephanie L. Hoelper

Indiana University of Pennsylvania

December 2015

Indiana University of Pennsylvania
School of Graduate Studies and Research
Department of Professional Studies in Education

We herby approve the dissertation of

Stephanie L. Hoelper

Candidate for the degree of Doctor of Education

_____ _____

Douglas Lare, Ed.D
Professor of Professional and Secondary Education,
Co-Chair
East Stroudsburg University

_____ _____

Susan Fello, Ph.D
Professor of Professional Studies in Education,
Co-Chair
Indiana University of Pennsylvania

_____ _____

Teri Burcroff, Ph.D
Professor of Special Education and Rehabilitation
East Stroudsburg University

ACCEPTED

_____ _____

Randy L. Martin, Ph.D
Dean
School of Graduate Studies and Research

Title: The Impact of Inclusion on the General Education Curriculum

Author: Stephanie L. Hoelper

Dissertation Co-Chairs: Dr. Douglas Lare
Dr. Susan Fello

Dissertation Committee Member: Dr. Teri Burcroff

Districts throughout the nation are restructuring their academic placement of students to create inclusive classrooms. This means that classrooms will have students with Individualized Education Plans (IEPs) taking classes with their general education peers. The era of segregated classrooms, with general education and special education students being separated, is gone. As inclusion increases throughout the nation, research has not focused on how it may be impacting the general education curriculum taught in the inclusive classroom. The purpose of this phenomenological case study assesses the impact of inclusion on the general education curriculum in a suburban secondary school in PA. The yearlong study utilized several different types of data collection including classroom artifacts, teacher observations, discussion groups, questionnaires, and motivation surveys. After the data was collected and analyzed, the researcher searched for patterns and themes to determine whether inclusion may be impacting the general education curriculum that all students receive in an inclusive classroom. The results of the study showed that there is a need for more professional development and collaboration between administration, special education teachers, and general education teachers. The results also demonstrated there is a limited amount of curricular depth that can be taught to students in an inclusive classroom and retained by them. This is a foundational study to raise awareness that districts need to examine how they conduct inclusion in their schools to eliminate the decreased academic and educational gains every student involved in inclusive classrooms is experiencing.

ACKNOWLEDGEMENTS

The journey I have been on for the past several years to complete this doctorate has given me so much more than I could have expected. I was blessed to become a mother twice: to my beautiful son, Aidan, and my daughter, Maribelle. You two are my world, and I would never be who I am now without the two of you in my life!

I also want, to thank my dissertation chair, Dr. Doug Lare, for always believing in me and keeping me focused. You have gone through many trials and challenges with me in the course of this degree, and you have always helped me to believe in my abilities and myself. I am truly grateful that I have had the privilege to work with and learn from you. The amount of support you have given me is immeasurable, allowing me to grow into a scholar beyond where I thought I might ever reach.

I would also like to thank Dr. Terri Burcroff and Dr. Susan Fello for offering me support and guidance with the process. Your feedback and guidance have assisted me to reach the life-long goal of earning my doctorate.

I do need to thank the two teacher participants for believing in the research that I did enough to look past concerns on the topic. You opened your classrooms to me and allowed me conduct my study even when others refused due to concerns. I truly appreciate you both for taking part in this adventure!

I am also so grateful for my parents who have always supported me in my choices academically and emotionally. I know that there have been bumps along the road with you questioning my decision, but you always allowed me to figure things out with your guidance. I am honored to call myself your daughter and to show you that all the support allowed me to earn my doctorate.

Lastly, to my loving husband….I know that this has not been an easy process for either of us, and I thank you for being my rock. You have supported me and kept me sane as I struggled at times with balancing family and academics. Thank you for allowing me to be a mom, bringing Aidan to ESU when he was a newborn so I could spend some priceless moments with him before classes. I love you and love who we are together as a couple, parents and best friends.

DEDICATION

For Adam, you have done so much to make this happen without even realizing it. I would not have completed this accomplishment if it were not for your love, support and understanding. Thank you.

For Aidan and Maribelle, the two of you make everyday an amazing adventure I would not want to miss! I hope you always keep reaching for your goals and do not let any setback deter you. Always stay true to yourselves!

For my parents, thank you for supporting me on my choices in life. It is because of the two of you that I am able to always keep moving forward and be confident in myself.

For Shawn and Stacey, thank you for always watching over your little sister. You have always made me laugh when I needed it and have always believed in me!

TABLE OF CONTENTS

Chapter Page

Chapter Page

LIST OF TABLES

LIST OF FIGURES

CHAPTER 1

INTRODUCTION

The quest for equal education for all has been the driving force since the 1970s and lay behind the movement towards inclusion of students in public education. Students with special needs have been mixed into general education classes in the belief that they will gain stronger academic skills when working with peers (Diamond, 1979; NIUSI, 2005; Staub, 1999). According to the U.S. Department of Education (2010) 57% of students with disabilities are educated in a general education setting for four-fifths of their school day and research has shown gains in these students' academic progress. Currently, more than half of the K-12 students with special needs are being placed in general education classrooms, demonstrating that the inclusion movement is alive and well in our nation's public schools.

Inclusion offers students with special needs the opportunity to be taught in a general education setting instead of in small groups with similar students. It stems from the belief in the least restrictive environment (LRE) for students, and many researchers feel that the only way to achieve LRE is to reject any continuum of service programs such as a self-contained classroom or a pull-out program and go to a complete inclusion model.

Researcher E.J. Edwin as argues that "the true essence of inclusion is based on the premise that all individuals with disabilities have a right to be included in naturally occurring settings and activities with their neighborhood peers, siblings, and friends" (as cited in Tompkins and Deloney,1995, p.2). For Panther (2007), the goal of inclusive education is to provide quality, appropriate education to all students. Students who are included in general education classrooms will be taught along with their non-disabled peers.

As the concept of inclusion continues to permeate public education, determining what

curriculum to teach becomes the issue. Teachers are now required to make sure they are making appropriate modifications and accommodations to their lessons. A critical question then becomes what happens to the general education curriculum when large amounts of accommodations and modifications have to be implemented in one classroom?

Purpose of the Study

The state of education changes each decade depending on what educational leaders are making into law. Over the past few years, the momentum in special education has been for students with disabilities to be mainstreamed into general education for social and academic gains. Special education has moved from persons with disabilities living in state institutions, to their being placed in self-contained classrooms within a public school, to now being included in the general education classes (U.S. Dept. of Ed., 2010). In this process, it is often the general education curriculum that is modified to meet the needs of the students in the classes. Each year, teachers are expected to know what functioning levels their individual students are working at and create lessons that present the curriculum at that level based on data given in the students' IEPs. The problem with presenting curriculum at the students' functioning levels stems from the curriculum often not being functional itself, with set concepts and content that the teachers must follow. Curriculum is written and approved before the school year begins, and the teachers are expected to teach a set of concepts to prepare their students for department finals or state tests. A teacher might not be able to finish teaching the set curriculum due to modifications and/or accommodations that each individual student needs, but he or she is expected to have the students pass the tests or finals. If a teacher is unable to get through the curriculum, it can be assumed that the students do not possess enough knowledge or have a sound understanding of the concepts to pass.

The primary purpose of this study is to examine the effects that inclusion has on the general education curriculum to discern whether there are differences in the educational content between an inclusion and a non-inclusion classroom. Focusing on the curricular content taught in each class through several types of data collection will make visible any changes to the content through the teachers' instructional practices. By focusing on the content that is taught to each class, inclusion and none-inclusion, curricular changes will also become evident. The study will examine whether different classes receive the same amount of detail in explanation and implementation of the curriculum. Through the use of observations, discussion groups, and surveys, the data collected will be used to identify any differences within or between the two classes.

Statement of the Problem

In a national push for school districts to provide inclusive education, as found in the 1997 addendum to the Individuals with Disabilities Education Act (IDEA), districts are required to examine their selection process for inclusion classes and how it affects "all" students' learning. The curriculum needs to be examined for content that is taught, presentation of materials, and expectations of student retention and advancement. This study will examine whether inclusion affects the general education curriculum that is taught in a core academic class at the secondary level to identify any content differences such as pace and expectations.

Research Questions

When comparing the curriculum in an inclusion and a non-inclusion classroom, it is assumed that in essence the two types of classroom are the same. Any type of testing, diagnostic or formative, would ideally examine the same level of skill development in the same content areas. For this study, an inclusion classroom is considered a class that has more than 20% of the

student population having an Individual Education Plan (IEP). A non-inclusion class is considered a classroom with fewer than 20% of the student population with IEPs. True inclusion is a class with only 10% of the total class's population having IEPs, but this is very hard to find in school districts due to staffing and funding shortages and the increased number of students with special needs.

In the Stroudsburg, Pennsylvania, school district, the students are randomly assigned to their required courses. To examine whether this is the case in both types of classrooms, the first research question examined whether there is a difference in the types of assessments that are given in an inclusion and a non-inclusion classroom.

1. Is there a difference in the assessments, formal and classwork, used in an inclusion and a non-inclusion classroom?

A critical element when examining whether there are differences in the curriculum taught in an inclusion and a non-inclusion classroom is the content taught by the teacher. What the teacher focuses on throughout each class period can modify the curriculum causing a change in what each class is learning over the course of the school year. Focusing where the different classes are in the curriculum can gauge the end skill set the students will possess. Whether there were differences in the pace of the curriculum was assessed in research question two.

2. Does the pace or speed that the teacher is going regarding dissemination of information differ for content in an inclusion and a non-inclusion class?
    a. Are the inclusion and non-inclusion classes at the same point in the curriculum?
    b. Are the inclusion and non-inclusion classes getting the same allotment of time to practice concepts that are taught?

Margret Winzer (1998) states:

> Because teacher beliefs about the value of the disabled and their professional responsibilities towards them correlate with teaching practices in serving children who are exceptional, complete inclusion and acceptance of students with disabilities will only happen if there are long-term changes in the attitudes of educational professionals (pp. 233-234).

This leads to research question three, which examines how teachers' attitudes potentially influence their teaching strategies, thus modifying the curriculum taught to inclusion and non-inclusion classes.

3. Does the teacher's attitude towards inclusion, as measured by the survey questions and measured by interview questions, change the approach to teaching the course curriculum in an inclusion and a non-inclusion classroom?
4. Are there differences in the instructional strategies implemented in inclusion and non-inclusion classrooms by the teacher?

Significance of the Study

Public education has been viewed in this country as a birthright since the 19th century's launch of the common school idea. Public education is secured with the Constitution (Imoukhuede, 2011); however, it is governed by the states. Roach and Salisbury (2006) expressed how control of education at the state level could be inferred from the Tenth Amendment of the U.S. Constitution, which gives the states the power to control their own affairs. Each state is responsible for the education of its children.

Since the introduction of public education, there have been haves and have nots. Before 1975, students with disabilities were typically excluded from public education (Yell, Rogers, and Rogers, 1998). In 1975, Congress passed the Education for All Handicapped Children Act,

which was later renamed the Individuals with Disabilities Education Act (IDEA). This act gave parents a voice in their children's education and provided support to the states to offer appropriate education to all students. However, IDEA was left up to state-by-state interpretation, creating a wide range of opinions about what is appropriate education for all.

Now, with IDEA having been an influential aspect of education for over 30 years, there has been an emergence of questions that need to be addressed on how its implementation is impacting all students. Research over the years has examined the impact that inclusion has had on students with special needs. However, the question becomes how much we really understand or know how inclusion impacts the general education curriculum that is being taught.

Winzer (1998) conducted a study in which he interviewed teachers and administrators who were doing inclusion within their school. He found that some teachers and administrators felt that there was a failure to meet the needs of either the regular or special-education students. In this same study, teachers also shared that they felt that inclusion was a problem for themselves and for the regular students. It could be asked whether these teachers were properly prepared or felt that they had the support necessary to teach in an inclusion classroom. It begged the question that if the teacher needed to slow down how fast he or she was presenting concepts to the students and needed to modify the teaching style whether it affected the curriculum content that was being taught.

More recent studies done by Walker (2012) and Orr (2009) looked into whether offering training for the teachers in their preparatory programs helped teachers to feel prepared to teach inclusion. These studies demonstrated that an introductory course does not alleviate the concern teachers have about meeting the needs of their students in an inclusive setting. Daam, Beirne-Smith, and Latham (2001) found that the participants in their study did not feel that students

should be only taught and monitored by the general education teacher. Current research is also demonstrating that inclusion needs more examination to allow it to be a positive experience for all involved, from the administrative down to the student level.

Inclusion is meant to give all students a free and appropriate education, but this becomes a struggle when one teacher has to teach a class of varied ability levels. Pawlowicz (2001) found that in a classroom one teacher is required to cover a certain amount of material, but with various ability levels the teacher struggles in determining what pace is appropriate for all. Daam, Beirne-Smith, and Latham (2001) noted that a general-education teacher had an increase in instructional load when teaching an inclusion classroom. They also noted that both general-education and special-education teachers felt that there were more management issues that needed attention in an inclusive setting. A teacher is required to cover certain material in a predetermined order to make sure each student has a foundation in the course. If teachers are focused on the curriculum's pace (the speed necessary to complete teaching a concept), making sure each student is receiving the appropriate modifications to the curriculum, managing a variety of skill levels, and maintaining individual progress, how do they have time to make sure they are covering the curricular content?

As stated before, research has taken a long look at the benefits of inclusion for students with disabilities, but what about the general-education students (Diamond, 1979; Pawlowicz, 2001)? How do these students fit into the picture of inclusion, and what is the impact on their education? In an inclusion classroom, all students are given similar assignments to complete, with modifications being made for special education students. A study done by Sparks (1999) discussed how general-education students might feel that they have been treated unfairly by getting the same grade for harder work than a student who is doing far less because he or she is

labeled “special needs.” Pavri and Monda-Amaya’s (2000, 2001) research has found this could cause tension among students and create isolation for the special-education student. This tension and isolation is due to the special-education student receiving special treatment and limiting the amount of content knowledge that other students are obtaining (Pawloicz, 2001).

This study examined the effects inclusion had on the general-education curriculum being taught in a secondary school. to determine whether inclusion changed or modified the curriculum and thus creating gaps in the content knowledge the students should be ending a course with to be prepared for the next year of school.

Research Design

This qualitative, phenomenological research study investigated whether inclusion has any effect on the general-education curriculum taught in a secondary science class to allow for possible improvement to the class’s abilities to learn the curriculum. Further, the study’s results may offer some ideas about the implementation of inclusion and what students it could benefit academically.

The study examined inclusion and the general-education curriculum through four case studies. The researcher interviewed two general education teachers who each taught one inclusion section and one non-inclusion section in a junior high school setting in the Stroudsburg, Pennsylvania, area. In this study, an inclusion class is defined as a general-education class with more than 20% of the students with an Individualized Education Plan (IEP). The non-inclusion class was a general-education class with less than 20% of the class population having an IEP.

The Stroudsburg Area School District employed 415 teachers in 2014. The two teachers were selected at the secondary level because most science courses require a prerequisite course

or build on concepts taught in previous courses. The teachers involved in the study were given a pre-school-year questionnaire that gathered data on their job satisfaction and backgrounds in teaching special-education students. The teachers were asked on the questionnaire to produce the objectives for the classes they taught to allow for the researcher to monitor progress on the set curriculum.

Once the year began, the teachers were asked to administer a simple motivational survey to their students to see how prepared they were for the Earth Science classes they were assigned to and their ability to work with others. The teachers were required to submit all artifacts for the class: tests/quizzes, lesson plans, labs, and handouts. The classes were observed three times throughout the course of the 2014-2015 school year to collect information on where each class was in the curriculum and how the material was presented to the students in each class type.

The teachers also took part in monthly discussion sessions where their beliefs about inclusion and general education could be discussed in an honest fashion based on previous statements, artifacts collected, and observations done. At the end of the school year, the teachers were given back all the course objectives they had turned in at the start of the school year and were asked to assess their students' proficiency levels on each objective. All the data collected was used to monitor the progress of all students in the four case studies (four classes) and analyzed for patterns and themes that presented themselves that would indicate the impact inclusion could be having on the general-education curriculum.

Rational/Theoretical Basis for the Study

The theoretical basis for the study is influenced by Albert Bandura's social learning theory (Bandura, 1989). Bandura focused on how modeling is an important aspect of learning, leading to the assumption that if a teacher has low expectations and teaches down to a student,

the student will have a low response and poor retention of content material taught. This implies that if a teacher has high, consistent expectations for all the students, then the students will rise to a new level of learning and will retain more of the curriculum (Woolfolk, 1998). Social learning theory focuses on the internal and external factors that impact learning. It is human nature to model what others have demonstrated through observations. These observations then teach a human how to behave in various settings and create a sense of comfort in those settings. Bandura's work focused on how students model what they observe their teachers doing in the classroom. According to Bandura (Social Learning Theory, 1977):

> Learning would be exceedingly laborious, not to mention hazardous, if people had to rely solely on the effects of their own actions to inform them what to do. Fortunately, most human behavior is learned observationally through modeling: from observing others one forms an idea of how new behaviors are performed, and on later occasions this coded information serves as a guide for action. (p. 22)

Bandura focuses on two types of learning: enactive learning, which is learning by doing, and vicarious learning, learning by observing others. When looking at how inclusion affects the general-education curriculum, both types of learning come into play with students. First, each student in the room is watching the teacher and other students to pick up on social cues on what to say and do, what are acceptable behaviors, and what is the objective of the content for the day. Second, when the students are expected to perform activities, they learn how to use the classroom equipment for the course, such as a triple-beam balance for mass or a protractor for angle measurement, and begin to understand course expectations. Through Social Learning Theory, differences in the content taught and the presentation can affect the retention and accountability that the students in the class will express and own.

According to the theory, a person must have attention, be able to reproduce the information presented, retain the concepts taught, and have motivation to take part in all the previous actions. For the purposes of this study, Social Learning Theory supports the belief that the students will not all perform at the same level and will not retain the curricular content when the presentation is different for inclusion and non-inclusion classrooms. It also looks to support the belief that if the teacher has lowered expectations for the inclusion classes and the teacher's motivation is lower for the students in the inclusion classroom than for those in the non-inclusion classroom, the curricular content that is taught to the students in the non-inclusion classroom and retained by them will differ.

As the process continued with the study the theoretical foundation began to change and though Albert Bandura's Social Learning Theory still supported the study it was not the foundation anymore. The true theoretical foundation is that inclusion is not working in its current state. It is broken, but can be mended by examining what is really occurring with inclusion in schools and having honest conversations on what needs to be done to fix it. Inclusion might not be the answer to decreasing the educational gaps faced by our youth. However, inclusion could be beneficial in decreasing some of the educational gaps if implemented properly with a clear purpose and support from all levels in a district.

Definitions

Content: The subject matter of the curriculum implemented by each individual teacher within his or her classroom.

Curriculum: The written scope and sequence that is kept on file in the central office of a district and handed to every teacher who is teaching that subject.

Curriculum Pace: The speed necessary to complete teaching a concept.

General Education: This is the educational experience that a typically developing child receives. The curriculum content is defined by standards that are created by the department of education of each state. The program of courses gives students a broad educational experience providing fundamental skills and knowledge.

General-Education Curriculum: The content taught in a subject that a non-disabled student receives within the context of general education.

Inclusion: The placement of students with disabilities into a general education classroom, regardless of what level of disability – mild to severe. Significant modifications and accommodations need to be made to the curricular content being taught for success. General-education teachers teach these classes, and the responsibility for progress and the students maintaining their skills is placed on the general-education teacher.

Inclusive Education: Inclusive education is a process whereby the school systems, strategic plans, and policies adapt and change to include teaching strategies for a wider, more diverse range of children and their families. Inclusive education implicitly means identifying a child's learning style and adapting the classroom and teaching strategies to ensure high-quality learning outcomes for all members of the class. Everyone is important, unique, and valued for his or her contributions to the school (Lene, 2012).

Many public school districts are not adhering to the recommended percentage of students with special needs being placed in general education classes. It is often the standard practice that a few students with special needs in a general education classroom are not defined as "inclusion" classes, but are considered general education classes. Unfortunately, this leads to the over representation of students with special needs in general education creating large special education classes and many "true" inclusion classes. Then the general education teacher, with

limited special education training, is being told to teach the over populated general education class without support leading to frustration among teachers and students in that class.

As mentioned before true inclusion is to be 10% of the classroom population holding Individualized Education Plans (IEPs). For the purpose of this current study inclusion was defined as a class with 20% or more of the population being students with IEPs. This study then classified a non-inclusion class as a room with less than 20% of the student population in that class holding IEPs. This can become very misleading since even the non-inclusion classes in this study are technically, by strict definition, inclusion classes. When looking at the statistical make-up of each teacher's classes you will note that the non-inclusion class for Eli is 13.6% included students and Pat's non-inclusion class is 5. 3%. Both classes labeled non-inclusion in this study are actually what true inclusion is based on the definition. The classes labeled inclusion for this study with Eli's being 42.6% and Pats being 31.8% included would actually be considered special education classes by definition. However, for purposes of this study, a distinction was made to allow for comparisons and to also allow for data to be gathered to begin the process of identifying if inclusion, as it is defined in most public school districts, was impacting the general education curriculum being taught.

Individual Education Plan (IEP): A plan that is designed to meet the individualized needs of one child when placed in the least restrictive environment. The Individuals with Disability Act mandates that an individualized plan be created and implemented for each such child.

Instructional Strategies: The approaches that the teacher uses within his or her classroom to teach the subject content.

Least Restrictive Environment: An environment where a student with a disability is educated with his or her non-disabled peers to the greatest extent possible.

Likert Scale: A psychometric scale that is commonly used for questionnaires in survey instruments.

Students with Special Needs: Children who have disabilities or who are at risk of developing disabilities that may require special-education services (Special education dictionary parentpals, 2012).

Assumptions

The assumption for the study was that there would be a difference in the level of curriculum taught in the inclusion and non-inclusion science classes. This assumption was based on the limited research that is currently available in the field looking at factors that influence teaching special-education students based on training, beliefs, and comfort levels of the teachers presenting the curriculum who are not trained special-education professionals.

Limitations

This study does possess limitations due to the nature of trying to examine a true inclusion classroom where the entire school community (parents, teachers, students, administration) works together to incorporate ideas and existing concepts to make all the students successful no matter what their level of functioning (Obiakor, Harris, Mutua, Rotatori, & Algozzine, 2012). This study focuses on one school district in a suburban area of Pennsylvania that had at least two classes at the same grade level, with two sections being inclusion and two non-inclusion classrooms. This was done to allow for a large enough sample pool to collect relevant data and allow for observation of each type of class. The study could only use a small sample size due to limited accessibility to classrooms that were the same level and course. The classroom had to also possess at least 20% or more of the students with IEP's for the inclusion classroom, limiting the amount of generalizable data.

The amount of students being quantified as 20% or less for the non-inclusion class was another limitation, since true inclusion is said to be a class with only 10% of the class population being students with IEPs. In this study there was some quasi-inclusion due to the numbers of students with IEPs being so high in all the classes. One inclusion class that was considered had 32% of the student population IEPs. The other had 42% students with IEP's. This becomes a quasi-inclusion classroom because any classroom with more than 10% of the student population having IEP's is no longer a general-education class but a special education classroom. The general-education students are now the small population in the class, which in turn could change the dynamics of how the class is taught.

One major limitation of the study is the current financial state of education. The current economy is cutting educational funding for tutoring programs, educational initiatives, and advancement of all educational services. This limited funding of school districts has created budget cuts, and a district in financial distress has led to teacher and program cuts. Though there is always money allotted for special-education services within a school district, the cuts in teaching staff change the ratios of student to staff and trainings that could offer valuable skills to implement inclusion. Inclusion requires professionals who have knowledge of modifications and accommodations and who feel supported with resources to assist in creating a classroom that can meet all the students' academic needs (Daam, et al, 2001).

Another limitation of this study is the insufficient research on the topic of general-education curriculum and how inclusion has affected the presentation of content material. Most of the research that has been done regarding inclusion has only looked at the social gains of students with special needs and very little at their academic gains in inclusion classrooms (Diamond, 1979; NIUSI, 2005; Staub, 1999). Current research does not focus on how inclusion

affects the general-education students or whether the general-education curriculum is altered or implemented in the inclusion classroom.

These limitations create a very limited pool of research to examine with regards to curriculum inside an inclusion classroom. It presents this researcher with large gaps in information leading to speculation about certain aspects of what may be occurring in the inclusion classroom. Limited research data on how the federal mandates of inclusion have altered or modified how the general-education curriculum is implemented have led to this study.

Summary

This chapter has provides a brief description of the current need to teach all students in the least restrictive environment. Meeting legislative demands for the inclusion of students into the general-education curriculum has demonstrated there is a need for more research on how the curriculum is presented to the students and whether all students are presented by the same academic expectations. Inclusion began as a mandate to provide the best education to special-education students, but it is unclear whether the general-education curriculum is being impacted in any way from inclusion of students with special needs in the courses.

Chapter 2 examines current and past research to identify what the history of special education has been and the history of curriculum. It will discuss the research on teacher beliefs, demands, and training. Student issues, from curricular fairness to student expectations, are also examined.

CHAPTER 2

INTRODUCTION

This chapter includes a review of the literature that is pertinent to the topic of the general-education curriculum taught in public schools as it relates to the inclusion movement. The purpose of this study was to determine whether inclusion has impacted the general-education curriculum that is taught to all students. In reviewing the literature, several major themes emerged. These themes are discussed throughout Chapter 2 with the intention of examining whether there has been any deviation in the general-education curriculum that is taught in an inclusion and a non-inclusion classroom. The major themes discussed are the evolution of special education, teacher preparedness to teach inclusion classrooms, teachers' self-efficacy and beliefs, the demands inclusion places on teachers, the effects of inclusion on general-education students, and curriculum changes and fairness of material taught and assessed. Examined, including articles in peer-reviewed journals such as the *Journal of Educational Psychology, Journal of Learning Disabilities, Remedial and Special Education*, and others, studies, and books. The literature review discusses research that has been conducted on inclusion, general education, and curriculum.

History

History of Special Education

The focus of education has always been to educate students who were viewed as teachable, but more recently education has been challenged to create equal opportunities for students with special needs who were once considered non-teachable in regular classrooms (Antoinette, 2002). In earlier times, people with disabilities were not offered a free public education due to the belief that the disabled were not going to be active members of society. The

early 1800s had asylums or institutions to care for those with any type of impairment, both physical and mental (Thompkins & Deloney, 1995).

One of the first true educational movements was compulsory education. Yell, Rogers, and Rogers (1998) defined compulsory attendance as a time when all students must attend an educational institution. The first state to require compulsory education was Rhode Island in 1840, with Massachusetts following in 1852. (Yell et al., 1998). This educational law was adopted in all states by the early 1900s; however, it did not cover students with special needs. An example of the exclusion of special-education students took place in 1893 with the court case of Watson v. City of Cambridge, Massachusetts, when the state Supreme Court ruled that students could be removed from public school if they were "weak in mind" and unable to benefit from education (Cited in Yell, Rogers, & Rogers, 1998). Winzer (1998) discussed a case from 1934, when the Cuyahoga County Court of Appeals, in Ohio, ruled that compulsory education was required for children ages six to 18 but allowed the state authorities to exclude students they felt were not fit for education. Another case that allowed for students with disabilities to be excluded from education took place in 1958 when the Supreme Court of Illinois held that the state's existing legislation on compulsory education did not require the state to provide a free public education to those who were considered "feeble minded" or "mentally deficient" (Yell et Al., 1998). This ruling stood because the students were considered incapable of benefiting from the benefits of a good education.

At the same time, it was only a matter of time until education became a focus of civil rights movements. One of the first major civil rights cases that changed the face of education was Brown v. Board of Education in 1954. This landmark case focused on creating equality for all people without regard to their race or disability. This opened opportunities for children with

disabilities to receive an equal and appropriate education. As this decision began to take effect, advocacy groups formed to work on removing the exclusion of children with special needs (Yell, Rogers, & Rogers, 1998).

The progression from compulsory education to the civil rights movements of the 1950s and 1960s led to the U.S. Congress to enact the Education for All Handicapped Children Act, Public Law (P.L.) 94-142 in 1975 signed by President Ford on November 29th. The U.S. Department of Education has been monitoring the application of this law for over 35 years. The 1983 and 1990 amendments changed its name to the Individuals with Disabilities Education Act. These amendments have led to a federal push for inclusion in schools throughout the United States.

Graham and Slee (2008) discuss how inclusive education started as a call for needed changes in how school treated students with special needs. However, more recently, it has become a catch-all safety net to explain the present circumstances in public schools. Lindsay (2007) defined inclusion as the school districts having to adapt to meet the student with special needs or potential needs instead of the student adapting to the educational setting.

Inclusion began as "halting the practice of segregating children with disabilities" and "was a progressive social movement" (Graham & Slee, 2008, p.1). However, as with most social movements, the entire picture of inclusion was not thought out. This left future changes or alterations unconsidered.

Implementation of inclusion in school districts is financed by federal money, leading school districts to move towards an inclusive model of education. However, many educators and professionals question whether the implementation of inclusion is being done correctly (Martin, 1995; Ellins & Porter, 2005) and if it is in the best interest of all students. Questions persist about

the proper way to undertake inclusion and its monitoring for effectiveness

History of Curriculum

In education, the term "curriculum" is used continuously. No matter what content area being taught, what concept being learned, or what grade, curriculum is the driving force. Curriculum is a challenge because there is no set definition and it can change almost yearly depending on what the district and the state are focusing on in each content area. Garrett (1994) states that curriculum could be considered the conscious, written goals put into a course of study or what the teacher teaches in his or her classroom with specific intentions and actions. It can also be considered what societies value as important information to pass onto their next generation (Garrett, 1994). No matter how it is defined, the concept of curriculum has been around since the 1920s, accompanying the progressive education movement (Mathison and Freeman, 1997) where reform was directed at reconstruction of American life, and it continues to change and drive the educational process.

Curriculum has taken on many names and ideas, but it continues to be driven mainly by certain fields in education. Cohan (1978) expressed how leaders in the fields of science and economics have been the two main groups heard from on how curriculum should be shaped and what topics should be focused on in our school systems. Mathison and Freeman (1998) found in their research that curriculum also parallels what is happening in society at the time. It has allowed for current movements and major themes to be a focal point in a subject area (Garrett, 1994) and at times eliminates some previously taught information. In America and abroad curriculum is facing the same challenges. According to the Royal Society of the Arts (2002):

> We still have a curriculum model close to the one that prepared students for the much more stable and certain society of the 50s, where we knew what a "subject"

was and what you ought to know about it (Wedell, 2008, p. 129)

Curriculum development and implementation ebbs and flows based on what is occurring in our economy. The 1980s saw subjects that were not mainstream, such as technical education, and not viewed as assisting the students in their academic achievement removed from schools (Mathison & Freeman, 1998). Wallace, Anderson, Bartholomay, and Hupp (2002) discuss how the current trend is to teach "all students" together no matter what their limitations or disabilities are because this is the societal push of the moment. Kozik, Cooney, Vinciguerra, Gradel, and Black (2009) support the views of Wallace et al. (2002), focusing on how with the push for "all students" to be educated together can lead to some complicated limitations and questions, especially in a secondary-school setting. Watkins, Kritsonis, and Lecturer (2008) shared how learning is fractured in today's schools, with little to no connection to what is in the real world. They argue that educational inquiry should be more than just what is current but allow students to be challenged to look at all aspects of events that have happened in the past to develop a deeper meaning of the knowledge to apply it to current issues (Watkins, Kritsonis, & Lecturer, 2008). Trela and Jimenez (2013) supported this view, discussing how curriculum needs to be "personally relevant" to the students and that this has been a struggle at all levels with the curricular demands being so rigorous.

Baughman (2008) looked at how the curriculum was formed after the introduction of the No Child Left Behind Act. She explained that curriculum now requires a research base for publication and an extensive examination of literature and approval before districts can adopt it. Over the years, curriculum has changed, with legal mandates producing confusion and fragments of knowledge. Yet there is not much research on how inclusion is changing the curriculum being taught.

Differentiated Instruction

It is common today to hear a teacher or administrator speak of differentiated instruction, which is considered to be a standard in each classroom. Tomlinson (1999), a leader in the field of differentiated instruction, stated that it was the teaching practice where the teacher works with the mixed abilities of all the students to teach the curriculum. The mixed abilities that the teacher should be focusing on are the students' interests, learning styles, and readiness to learn (Tomlinson, 1999, 2001). Friend (2008) shared another way of looking at differentiation as changes made to the content, the way students are taught, and how the students demonstrate what they have learned. Though it is viewed as a modern idea, it has been around since the one-room schoolhouse, where one teacher had to meet the needs of each student in the school to advance them to the next level.

Differentiation requires constant reflective procedures to check on teaching efficiency and learning that cannot occur with a standard lesson plan. As Stavrolula and Koutselini (2009) shared, the only way that differentiation is successful in a classroom is when the teacher chooses lessons based on the students' needs and their personal characteristics. To examine the efficiency of differentiation, Stavroula, Leonida, and Mary (2011) conducted a study that looked at the effectiveness of differentiation in mixed-ability classrooms to determine the characteristics of effective differentiation and to evaluate the equity and quality dimensions of differentiation. The study found that when trained professionals do differentiated instruction in a class, it was effective in assisting students in gaining valuable academic skills (Stavroula, Leonida, & Mary, 2011).

Previous research studies on differentiated instruction reported in Pham (2012) found no evidence that supported the belief that by giving tailored instruction to the students' preferences

there would be an increase in the students' academic understanding and knowledge base. Bailey and Williams-Black (2008) identified that only three teachers out of 24 who participated in the study were meeting the criteria for differentiated instruction in their classrooms. This demonstrates that even trained professionals do not implement differentiation properly. Dee's (2011) study identified that pre-service teachers were not reflecting on the student learning after lessons but on themselves. As research has shown, this self-reflection does not demonstrate the reflective thought processes required to create differentiated lessons (Dee, 2011). Focusing on themselves as teachers does not look at the students' needs, meaning that they will not be identifying areas of knowledge that the students are missing, limiting their academic growth.

As research has shown conflict in determining the effectiveness of differentiated instruction, it has demonstrated that even when professionals are trained to use differentiation, they are not implementing it properly. The effectiveness of differentiation could be a positive addition to a classroom, but without the proper training and monitoring of lessons, teachers taking the time to get to know their students, and the lack of time for collaboration and reflection, differentiation is not given a fair chance. Another issue appears with the size of classes. Teachers are being asked to make large academic gains in short amounts of time to meet the needs of state standards and state testing requirements to demonstrate that they are effective. The question is how can one teacher be expected to differentiate each lesson for 25 or more students in one class period daily, focusing on their interests, readiness, and background, while effectively teaching the core content?

Teacher

Teacher Preparedness to Teach in Inclusion Classrooms

Since the start of education, teachers have been responsible for creating an environment

that is safe and allows students to acquire new information. Teachers are the driving force behind students being introduced to new subjects, learning basic math and reading skills, and gaining knowledge that will hopefully be assimilated into the student's lives through career choices or higher education.

Diane Ravitch (2002) described how over the years the process of assessing teachers has changed. Years ago teachers had to prove their moral character to a school board, while today having students pass state standardized tests with a particular proficiency level determines a good teacher (Ravitch, 2002). Teachers' responsibilities have also changed over time. As Diane Ravitch said at the White House Conference for Preparing Tomorrow's Teachers in 2002, "Our nation faces a daunting challenge in making sure that we have a sufficient supply of well-educated, well-prepared teachers for our children." (Ravitch, 2002, p. 1)

Currently, there is a blurring of the general-education and special education teacher's roles and what each is required to do during the workday. We are forcing teachers to become "highly qualified" but assigning them to teach students that they might have no qualifications to teach. Bender, Vail, and Scott (1995) conducted a study that looked at the types of instructional strategies offered in mainstreamed classes and found that for inclusion to be successful the instructional quality that is offered is a key factor in student learning. The concern with this study is that the researchers used self-report questionnaires, which allows for reporter bias. Nevertheless, what challenges might a general-education teacher face when asked to offer quality instruction to students with disabilities when the teacher may have no experience teaching such students. Spence (2010) stated that the special education and general-education teachers should collaborate to develop and implement the learning and teaching activities in the inclusive classroom. This connects to teacher preparation in the district and the higher-education-

level training that teachers are receiving. A teacher, whether special education or general-education, certified, needs to learn how to collaborate when working outside his or her area of certification

Since the introduction of IDEA, teacher-certification programs have been revamping their teacher preparation by requiring all candidates to take classes in special education. Even so, research still shows that teachers leaving universities and colleges do not feel prepared for the demands placed on them in an inclusive setting. Buell, Hallam, Gamel-McCormick, and Scheer (1999) conducted a study that focused on general- and special education teachers' perceptions and in-service needs concerning inclusion. They sent out 508 surveys to 19 Mid-Atlantic school districts and received 273 completed and returned surveys. Using a Likert scale, they asked general- education and special-education teachers to share their feelings of efficacy in educating students with disabilities and what their training and support needs would be. The teachers responded that general-education teachers do not feel confident in adapting materials and curriculum, monitoring behaviors, or giving the individualized attention the student with disabilities might need. Forlin and Chambers (2011) more recently conducted a study of 67 pre-service teachers to determine their perceptions of inclusion. The results of the study supported previous research demonstrating how the amount of training and/or courses were not enough to allow teachers to feel confident teaching in inclusive classrooms (Forlin and Chambers, 2011). This study continues to demonstrate that educator's need continued training to feel confident in teaching all the students in their classrooms.

Conderman and Johnston-Rodriguiz (2009) conducted a nationwide survey study to examine the training that future special education teachers are receiving at their institutions for implementation in future employment. The findings supported previous research identifying a

lack of confidence, with general-education teachers saying that they were not prepared to make accommodations and modifications in the curriculum, had pacing issues when teaching the curriculum, and felt nothing had prepared them to teach in an inclusion classroom. White and Mason (2006) studied special-education teachers and found that 54% starting out do not know how to collaborate with general-education teachers. A nationwide survey conducted by Conderman, Morin, and Stephens (2005) surveyed special-education teachers, finding that they felt prepared for the paperwork but felt that little attention had been paid in their programs on how to collaborate or consult with parents or other professionals in their buildings.

Though researchers (Almog, 2008; Leyser & Tappendorf, 2001) have been working to gather information on how teachers are adjusting to the inclusion movement focused on their motivation, attitudes, concerns, and needs, the results indicate a negative trend in the implementation of inclusion, as evidenced by the studies referenced. Walker (2012) conducted a doctoral study to investigate whether pre-service teachers taking an introductory special-education course prepared them for entering the workforce. The results indicated that the teachers had a decrease in personal concern about teaching in an inclusive classroom because they felt more prepared by that single class. Orr's (2009) qualitative study of 15 special education graduates from a Midwestern university indicated that there is a lack of knowledge on how to implement inclusion.

One area of concern with the studies on teacher preparedness is that they all use survey instruments and look at relationships and/or personal emotions. Surveys only allow the responder to select a response from a set of predetermined numbers or answers, limiting the responder's true emphasis. The responders could have felt confident due to just finishing a class that taught them skills to prepare for teaching an inclusion class or might not yet have taken a class. Survey

data allows for reporter bias that can either paint a positive or negative picture, but not the true picture. Isherwood and Barger-Anderson (2008) found that regular teachers felt they were inadequately trained to work with special-education students, while the special-education teachers felt they were not trained adequately to teach the content knowledge, leading to constant struggle on how to work together to teach the students in an inclusion setting. T.J Walker (2012) conducted a doctoral study examining general-education teachers' attitudes regarding teaching inclusion classes and found that for inclusion to be successful, from the teachers' perspective, they need professional development on multi-modality approaches to teaching. As Winzer (1998) states, "The debate here is not on the merits of inclusion as a basic philosophy but on the capacity of the educational system to accommodate such a restructuring." (p. 232) It not only comes down to the educational system itself, but to the teachers who are to implement the curriculum to all the students in their individual classrooms.

Self-Efficacy and Beliefs

As with most humans, teachers possess a belief system about how to bring their curriculums alive to the students in their classrooms. They have experimented and modified how to present the content to feel confident that what they are doing is going to make some kind of impression on each student they teach. When teacher leave a certification program, the college or university graduating them believes that they are well trained in their certification area and are competent to teach it to students. Currently, teachers are faced with a daunting challenge of not only teaching their certification area but also learning how to modify what they teach to meet the needs of all the students in their classrooms. Ruma-Viel, Houchins, Jolivette, and Benson (2010) discussed how teachers' self-belief and confidence in teaching are positively related to how they feel they can instruct their students. The study consisted of a three-survey structure, with teachers

in one school district examining whether any relationship existed between self-efficacy and job satisfaction. It found that self-efficacy is directly related to job satisfaction, but collective efficacy did not have any correlation with job satisfaction (Ruma-Viel, Houchins, Jolivette, & Benson, 2010).

To understand this, it is imperative that we define self-efficacy. This concept is a part of social-cognitive theory introduced by Alfred Bandura, expressing that human beings believe they have the ability to influence their own actions successfully (Bandura, 1977). In education, this leads to the belief teachers have that they can influence their students' learning through the curriculum they are teaching because of their personal belief in their abilities to teach the material and concepts. The question then becomes if teachers have self-efficacy in teaching their topics, how can they continue to believe in their abilities when they are being asked to completely modify and change how and what they teach with the introduction of students with learning and/or cognitive disabilities into their classrooms.

An investigation by the U.S. Department of Education Office of Special Education and Rehabilitative Services (US DE OSERS) (2002) and Moores-Abdool (2010) found that most general-education teachers did not feel prepared to provide instructional accommodations for students who have disabilities. Teachers should not be expected to know how to modify the curriculum to meet the needs of all students with disabilities due to the large variation in the types of disability a student might possess. Trainings need to be implemented to allow the teachers to develop their confidence to teach the students assigned to their roster whether they are general-education students or students with IEPs.

One major concern that teachers have with their abilities is who is responsible for monitoring the students with disabilities. Klassen and Chiu (2010) found that self-efficacy in

teachers appeared to decrease as they examined teachers in western Canada, moving up in grades from elementary to secondary. This could be due to the large amount of inclusion that starts in secondary education resulting from the division of the school day into subject periods, with teachers being certified in specific content areas. Though a teacher might be confident in his or her subject area, he or she may not have the experience, exposure, or support to develop an understanding of how to address the entire student needs to create a successful environment for each student (Daam et al., 2001; Winzer, 1998). Daam, Beirne-Smith, and Latham (2001) found in a study they conducted with general-education teachers, special-education teachers, and administrators that even though the participants agreed students with disabilities had the right to be in general-education classes, general-education teachers should not be responsible for the education of all students in their room including those with disabilities. Researchers such as Avramidis, Bayless, and Burden (2000) and Cook, Cameron, and Tankersley (2007) have also noted that special-education teachers feel that they are more prepared by their training to be responsible for the students with disabilities compared to their general-education co-workers. They expressed concern about training of general-education teachers who now feel obligated to hold all students, without regard to learning or cognitive limitations, accountable for learning a standardized curriculum (Winzer, 1998). Historically, the special education curriculum was taught at a pace and in a way that continuous repetition of information was given for processing. Now general-education teachers are being told by their administrations that they are to follow their set curriculum to get the students ready for the next grade and standardized testing (Huber, Rosenfeld, & Fiorello, 2001) along with making sure all the students in their room are moving ahead in their learning. So, do teachers complete each objective in the set curriculum and just hope that all students can keep up, or do they slow down to meet the needs of students with

disabilities and not get through the curriculum and content that they have been told to teach? Here is where the gap in research begins.

Does inclusion change the general-education curriculum that is being taught to students due to all the accommodations and modifications that need to be made to meet the needs of all students? At this point, it is hard to answer this question because most of the research that has been done has been through self-report surveys or with short interval observations. Both approaches can assist in examining for observable changes to the curriculum, but very rarely are these approaches by themselves going to really look in depth at the curriculum being taught. None of the research focused on responder bias when filling out the surveys as a limitation. The research did not express that the brief observations, 15 to 20 minute intervals throughout a three- to six-month period, could leave room for interpretation on what is really occurring in the classrooms due to teachers being aware of observation dates and times and molding their lessons around the observer being in the room. These two limitations can create an illusion that the curriculum is intact within the inclusion classrooms, but unless it is examined through documents, discussion, and continued monitoring, many questions can go unanswered. That is why this study utilized discussion groups, document review, and observations to try to create a full picture of what the curriculum looks like in inclusion and non-inclusion classrooms.

As previously mentioned, one intervention that has been implemented in inclusion classrooms is differentiated instruction. Heckman, Thompson, Hull, and Ernest (2009) found that with the passing of the No Child Left Behind Act of 2001 teachers were required to become highly qualified in their instructional areas and to also implement evidence-based practices to assist in improving academic outcomes for students with disabilities. With the passing of this act, differentiated instruction became the choice of many general-education teachers; however,

trainings on it were limited. According to Tomlinson (2000), differentiated instruction is when a teacher uses a variety of instructional strategies in response to the individual student's needs. Teachers supply ongoing assessment of the instruction each student is receiving in order to adjust to what the individual student needs for success. Ernest, Heckaman, Thompson, Hull, and Carter (2011) discuss how a teacher using differentiated instruction uses four areas to select where changes need to be made: "content, process, product, and learning environments" (Ernest et al., 2011, p. 192). The researchers go on to explain that content can be modified, focusing on the overall learning outcomes being presented at a variety of levels; process is modifying how the information is taught; product is modified by what teachers expect the students to demonstrate they have learned; and learning environment means that teachers can change the room or the educational environment in that room to meet the student's needs (Ernest et al., 2011). The belief is that by working with these changes, teachers should be able to reach all the students in the room. Though in theory differentiated instruction appears to be a catch-all for inclusion, it does pose the question of what preparing for this type of instruction demands of the teachers implementing it. Now their lesson plans must contain sections on how they are going to reach each student utilizing what strategy, and then they will have several different assignments to grade with different grading rubrics. So, does differentiated instruction allow for the general-education teacher to spend individual time with each student who requires it or is it a Band-Aid to allow students with disabilities to enter into the general-education curriculum?

Demands Placed on Teachers

As researchers looked into how teachers felt about inclusion, they learned that teachers felt limited in being able to teach the curriculum to students with disabilities. They also learned that teachers felt that the demands placed on them were overwhelming. It is expected that all

teachers will have their students meet high standards in core classes, but their academic preparation does not prepare them for the increased demands in their classrooms (Connor & Ferri, 2007; Leyser & Tappendorf, 2001; Pawlowicz, 2001; Ravitch, 2002). Teachers are faced with increased diversity in their students' needs and levels, time constraints with teaching set curriculum, larger class sizes, and increased responsibilities to meet all the modifications and accommodations of their students with disabilities. Though teachers are trying to utilize accommodations that could assist all students in the classroom (Leyser & Tappendorf, 2001) it is increasing the preparation time needed to adequately teach a class. Teachers are also struggling with adapting curriculum to meet all the needs of the students in their classrooms (Conderman & Johnston-Rodriquez, 2009; Daam, Beirne-Smith, & Latham, 2001Hunt, McDonnell, & Crockett, 2012). Hammond and Ingalls (2003) found that regular-education teachers came to realize that they were not prepared to meet the academic-needs students with severe academic and social skills problems. Moores-Abdool (2010) also supported the discussion that teachers were expressing their concern for teaching inclusive classroom due to personal feelings of not being prepared to work with all students.

Almog (2008) and King-Spears (2008) said that though teachers have always been faced with academic challenges and changes, the inclusion movement has increased general-education teachers' demands and responsibilities to a questionable level. State standardized tests require schools to meet certain standards to be considered "good." One might question how a teacher can meet the needs of all the students in his or her classes while trying to cover a set curriculum in a timely manner to prepare students for state standardized tests. The curriculum is being challenged not only by state demands but student demands. These demands also change how a teacher perceives his or her ability to teach all the students in their courses, which involves the

teacher's sense of self-efficacy. Bowlin's (2012) doctoral work demonstrated that pre-service teachers did demonstrate more self-efficacy when they had been exposed to a course that introduced them to special education. However, the study did not look at how the pre-service teachers felt once they were employed and teaching in an inclusive setting to see if they still felt confident in their ability to teach all students.

Scruggs and Mastropieri (2013) reviewed research from the past 50 years indicating that less positive attitudes continue to exist at the secondary teaching level. Forlin and Chambers (2011) conducted a study examining whether pre-service teachers developed a more positive attitude after gaining knowledge and experience working with individuals with special needs. The study continues to demonstrate that even with training teachers carry a less than positive attitude when including students with more severe behavioral or physical needs in the general-education curriculum (Forlin & Chambers, 2011). The demands at the secondary level to prepare students to transition out of high school to go to college or to enter into the workforce, coupled with state testing requirements, could be a factor. This study perpetuates the concern that if teachers are stressed over demands placed on them and negative towards teaching all the students assigned, does the general-education curriculum get impacted?

Students

Effects of Inclusion on General-Education Students

Researchers such as Rea, McLaughlan, and Walther-Thomas (2002) have studied the outcomes that come from inclusion. They found in a study of 8th graders with matched groups of students with learning disabilities that the students included in general education showed significantly higher achievement scores on a range of academic measures. Wallace, Anderson, Bartholomay, and Hupp (2002) studied 118 inclusive classrooms in 114 successful schools and

showed that students with and without disabilities received similar levels of academic engagement and low levels of behavioral problems. Neither of these studies looked at what the teacher was teaching to monitor for consistency of the content in the classrooms that they observed (Wallace et al., 2002) or for consistency with curricular expectations (Rea et al., 2002). The studies examined aspects of behavior and grades to determine any effect on the general-education students, but it did not focus or discuss the curriculum that was taught. Once again, this leaves a gap in the real question of whether inclusion alters the general-education curriculum. Student behavior will always affect student learning if not managed correctly, but it is not an indicator of the curriculum that is being taught. Research has focused on external variables such as student behavior, teacher management, and grades as indicators of disruption in a classroom without examining the driving force of a classroom, the curriculum that is required to be taught to the students.

Research has looked from the perspective of the students with special needs included in a general-education classroom, but what effect does inclusion have on the general-education student? As mentioned earlier in this paper, education was not always offered to all students as it is currently. Education was given to those who were believed to be prospective successful members of society (doctors, lawyers, teachers, nurses, etc.). Education was not intended for all children because not all children were viewed as potential contributing members of society. However, for over 35 years this has been changing due to educational law requiring school to "include" all students in the learning process through modifications and accommodations to teaching strategies, classroom materials, and possibly the curriculum's pace and content.

Very few studies look at inclusion from the general-education standpoint. Pawlowicaz (2001) did a review of research and found that it focused on how it affects the special education,

not the general-education, students. Baker and Zigmond (1990) completed a study involving one school in an urban setting where about three percent of the school's 40,000-student population was identified as learning disabled. Their results did show that there were changes in the behaviors of students within their math classes; however, the teachers in this study had gone through extensive training for inclusion during the 1987 to 1989 school years. Once again, the study looked at behaviors and not at the academic content in the classrooms studied.

The limited number of studies done on the effects of inclusion on general-education students has continued to limit information about the impact that inclusion is having on general education. Some studies (Rea et al., 2002; Wallace et al,, 2002) state that students find inclusion a positive experience, while others conclude that the general-education student feels things are not fair in grading and expectations. Ferguson, Hanreddy, and Draxton (2011) found that the students with disabilities in the inclusion class do not always feel things are equal either, expressing that they feel unheard by their general-education peers at times. This section will look at several studies and concerns that have been raised when focusing on the general-education students when they are placed in an inclusion classroom with students who have special educational needs.

Soukup, Wehmeyer, Bashinski, and Bovaird (2007) examined current research on the variables and access that students with disabilities had to the general-education curriculum. What they learned is that there are few such studies. They then studied 19 students in an inclusion classroom for three 20-minute intervals over a three-month period at the end of the school year. The teachers instructing the students were allowed to choose to teach the students a task that was linked to their IEP goals or one linked to a grade- or off-grade-level content standard. The results of their study found that accommodations and modifications were given to

the students with special needs but did not examine the curriculum that was taught to see if they were getting the same content as a student in a non-inclusion classroom. Pugach and Warger (2001) observed that the problem is not fixing the students or changing the students with disabilities but modifying and possibly changing the curriculum to enable student learning. Though it is understood that when a student is considered ready by the IEP team to enter the general-education curriculum, it has to be asked whether the student receives the same curriculum as a non-disabled student or if the curriculum is changed or modified for their understanding. In Soukup et al.'s (2007) study, a positive outcome was found when examining student access to the general-education curriculum through inclusion, but it did not focus on how the curriculum was adapted or modified to explain any changes to the content that may have occurred. In most studies, the focus is on how inclusion is allowing students with disabilities access to the general-education curriculum (Soukup et al., 2007; Wehmeyer, Lattin, Lapp-Rincker, & Agran, 2003), on social gains (Lindsay, 2007; Pavri & Monda-Amaya, 2001), or on academic gains (Lindsay, 2007; Rea, McLaughlan, & Walther-Thomas, 2002) for the individual students, but the research does not focus on the general-education curriculum that is being presented and whether the content is the same in an inclusion and a non-inclusion classroom.

Curriculum Changes and Fairness

As stated earlier, curriculum is a school-district-created outline of the concepts and information that are going to be taught during the school year in a particular subject. The curriculum comes with a scope and sequence that tells the instructor the time to spend on each concept. In an inclusion classroom, the pace of curriculum delivery might change (Almog, 2008; Diamond, 1979; Pawloicz, 2001) due to student requiring repetition and rephrasing of material for processing. Another question that has been researched is whether regular-education students

in an inclusion classroom feel they are receiving the same education as their classmates who are scheduled in non-inclusion classrooms in regard to their work expectations, especially when the expectations are different. A study by Sparks (1999) found that students may feel that they are not being treated fairly because if they perform at a higher level they will have more work to complete than a student with special needs but possibly receive the same grade. It is not only the students who expressed concern about fairness with two teachers in the room, which is now referred to as co-teaching, but also the teachers themselves. Gurgur and Uzuner (2010) did a small study to see what was effective with co-teaching in an inclusive classroom, indicating that teachers felt they did not communicate well with each other, leading to students not receiving a strong lesson on those days. If the special-education teacher and the general-education teacher do not have the same expectation for the lesson being taught, how can the students not feel that some of their peers are receiving special treatment?

This leads to the issue of fairness of student expectations in inclusion classrooms. The word fairness can mean many different things depending on the situation. In this paper, fairness is defined as all the students receiving equal treatment in class regardless of workload expectations and adult assistance. A small study done by Klingner, Vaughn Hughes, Schumm, and Elbaum (1998) found that high-achieving students enjoyed having another teacher in the room part of the day. However, the study was done with students ranging in grades three to six, where they were not observing differences between themselves and others in the classroom setting, making it impossible to extend these findings to secondary-age students who are competing for class rank and future advantages that their class rank can afford them. Diamond (1979) expressed the opposite opinion on the role of two teachers in a classroom, exploring how having another adult in the room did not mean that the students were receiving the individualized

attention that they needed to understand the topic.

In addition, all schools across the country rely on standardized testing to determine the progress their student body is making. One has to question whether it is fair to test all students by giving modified tests with limited questions to students who have disabilities and expect general-education students to have to take double or triple the questions and be told that both groups are proficient. A common belief in education holds that not all students should be judged equally because every student is different, but the implementation of standardized testing creates a homogenization of our students (Diamond, 1979; Pawlowicz, 2001).

A study done by Bulgren et al. (2006) sought to describe teachers' perceptions of student readiness to respond to challenges that the standards contained. Surveys administered to 70 teachers focused on the success in content-area courses which depended on students' mastery of content knowledge and manipulation of the knowledge gained. The results showed that the teachers put more emphasis on having the students with disabilities master the basic skills and strategies, while non-disabled students were expected to master content knowledge and be able to manipulate the knowledge they gained. The results of the Bulgren et al. (2006) study demonstrated how general-education students could feel a difference between them and their disabled peers based on the teachers' expectations of content mastery. If a teacher is expecting the non-disabled students not only to master the content knowledge but manipulate the knowledge they gained, the students might feel that their peers with disabilities are getting by with lower expectations, causing negative feelings between the two groups.

Research has not found all negative effects for non-disabled students in an inclusion classroom. A study done by Baker and Zigmond (1990) found that there could be a positive change in inclusion classrooms with teachers relying less on workbooks and worksheets for all

students to allow more interactive educational practices. Another study examining inclusion and its benefits at seven national sites found that with the right mentoring, inclusion can be a positive experience for all students (White & Mason, 2006). However, most research does not focus on the curriculum or the academic piece of inclusion when looking at the effects on general-education students. Staub (1996) conducted a literature review to examine the research on the effects inclusion has on nondisabled students, emphasizing that there was limited research on the academic advancement of the general-education student or how the curriculum was impacted. The research focused on the social benefits of inclusion for all students involved, but did not mention any limitations of inclusion on the students regarding academics or even any social concerns for the students (Staub, 1996).

Research has not focused on how the curriculum has been affected by including students with special needs, how the general-education students feel when they look at what is expected academically compared to their special-education peers, or whether the pace of content coverage changes in an inclusion and non-inclusion classroom. Due to this gap in the research, the effect of inclusion on the general-education curriculum needs to be examined to identify any differences among classes.

Framework for Teachers and Curriculum Evaluation

One way to examine curriculum is to observe a teacher's classroom. Since the reform movement began, changes have been made in how curriculum is created and taught. In 1996, Charlotte Danielson felt that a "good teacher" was not just identified through checklists and created the Teacher Framework (MET, 2010). The Framework was created as a way for all teachers, novice to experienced, to have a "structured dialogue with teachers" (PSEA, 2010). The Framework for Teaching (FFT) is a research-based observation tool grounded in constructivism

regarding learning and teaching (Danielson, 2012). Through the use of empirical studies, each component of the has shown student improvement regarding learning (MET, 2010). The validation of the Framework has occurred through the research demonstrating that high-quality teaching has led to higher-quality learning among students (MET, 2010). The Framework is divided into 22 components that are clustered into four domains and then further divided into 76 smaller items:

1. Planning and Prevention (Domain 1)
2. Classroom Environment (Domain 2)
3. Instruction (Domain 3)
4. Professional Responsibilities (Domain 4)

For the purposes of this study only one domain was used when observing the teachers: Domain 3, Instruction. Instruction is going to be examined for expectations of students, consistency of routines, information presented, and the process by which the teacher has the students assimilate the information. Any differences in any of the classroom structures, inclusion or non-inclusion, were noted and monitored as the study progressed to see whether the differences were affecting the curriculum taught to the students.

Summary

Curriculum development and implementation have been a topic in education for many decades. Even with all the advances in teacher training and support, there are always changes that throw a curve ball into the field of education. The most recent federal mandate of inclusion has raised concerns about how teachers are going to teach all students in their classrooms with the increased demands placed on planning, behavior management, and content presentation.

Research in this area has focused on the positive benefits in social advancement for the

special-education students. Very few studies have looked at the academic gains of the special-education students or the possible limitations inclusion has on the nondisabled students. Research studies published on the effects of nondisabled students tend to focus on the social aspects of education, not on the impact that inclusion might have on the curriculum being taught.

CHAPTER 3

METHODOLOGY

Introduction

The purpose of this study was to describe curricular changes that may occur in inclusion and non-inclusion classrooms at the secondary level in a public school. The focus of the assessment is on the science curriculum being taught to secondary-level students. Science was selected because it does not focus on large numbers of disabilities as an English course would when students are classified with a reading or writing disability. Math was also eliminated due to large numbers of students who have a disability in math computation or application. The science curriculum, with a more hands-on approach and visuals to reduce the gap in abilities between the general-education students and those with IEPs, limited the disabilities involved.

Data was gathered from three sources, including a collection of paperwork from the teachers (lesson plans, homework assignments, tests/quizzes, project requirements), monthly meetings with the teachers, and classroom observations. The descriptive research method was used to address the following research questions:

1. Is there a difference in the assessments, formal and classwork, used in an inclusion and a non-inclusion classroom?
2. Does the pace or speed that the teacher is going regarding dissemination of information differ for content in an inclusion and a non-inclusion class?
    a. Are the inclusion and non-inclusion classes at the same point in the curriculum?
    b. Are the inclusion and non-inclusion classes getting the same allotment of time to practice concepts that are taught?

3. Does the teacher's attitude towards inclusion, as measured by the survey questions and interview questions, change the approach to teaching the course curriculum in inclusion and non-inclusion classrooms?
4. Are there differences in the teacher's instructional strategies implemented in inclusion and non-inclusion classrooms?

Chapter 3 includes an overview of the research design, how participants were selected, the setting, and the timeline of the study. The methodology used and the rationale for using the methods is outlined. The chapter contains information on data collection, instruments used, and data analysis.

This study will assist in developing the literature on inclusion, focusing on how the general-education curriculum is impacted through the process of inclusion. Not only will this study add more information to the few inclusion studies that have been completed, but it will add data to the limited pool of research on inclusion and curriculum. Since no other studies have been completed at the secondary level which have utilized descriptive research methods with interviewing and observing subjects on how the general-education curriculum is affected by inclusion in science, this study will provide a new perspective.

Procedures

The study included multiple stages. The first stage involved contacting a school district in eastern Pennsylvania with a large secondary enrollment. Once a list of possible study sites was generated that met the study criteria, one high school was selected based on a non-random, purposive sampling process. The superintendent (Appendix J) and building administrator were contacted to gain formal consent to move into the next stage of the study.

The next stage of the study took place in the selected school district by collaborating with

the building level administrator to select three teachers to participate. Due to the limited number of teachers who taught the same course with an inclusion and non-inclusion class, the participant number was reduced to two. The two teachers were observed teaching science classes and took part in monthly discussion sessions during the school year. Barriers included identifying interested participants and finding a school with a large enough enrollment that it offered courses with sections that met inclusion and non-inclusion criteria. Another barrier was having an open and honest discussion with educators about inclusion due to the concerns about hearing their true feelings about teaching inclusion classes.

Once two teacher participants, who instructed both an inclusion and non-inclusion science class at the same level, were identified, letters of informed consent (Appendix G) were presented to them. A follow-up phone call was made to give the teachers more information about the study and to answer any questions. Letters of informed consent were also distributed to the students (Appendix F) in the classes that were to be observed during the year and the students' parents/guardians were also given an informed consent (Appendix E) to sign. Once all the written consents were collected, the observations were scheduled.

The two participating teachers taught different sections of the same course and level to classes labeled as inclusion and non-inclusion. Conventionally, inclusion classes are classes containing at least one-third of the students with IEPs and non-inclusion classes have no students with IEPs. The inclusion classes have students with learning disabilities but no severe intellectual or physical limitations requiring large amounts of modifications to the classroom or the curriculum being taught. The teachers chosen to participate in the study were administered an initial survey (Appendix A) at the start of the school year to gather teacher motivation, expectations for the class, and previous experience with teaching special education students. The

teachers participated in structured discussion sessions in October (Appendix C) and May (Appendix D) and in-between the structured sessions took part in informal discussion sessions to gather more data on the progress they felt was occurring in each of the class being studied, any struggles they experienced, and how they felt that the curriculum was being implemented for all students. Originally, the discussion sessions were to be held bi-weekly, but due to time constraints of the teachers involved, the discussion groups became monthly. The monthly focus group discussions occurred with both participating teachers to allow them to share their struggles and accomplishments. The formal data collected allowed the researcher to immerse herself into the phenomena of the classrooms. The teachers were also observed teaching both of their inclusion and non-inclusion classes twice during the 2013-2014 school year using the Charlotte Danielson model of teaching, the Framework for Teaching (Appendix H), using Domain three. The data collected was compared to find patterns and themes that could be used to analyze the effects on the general-education curriculum.

Information was also gathered from students who were taking part in the selected teachers' classes. At the start of the year students were administered a survey (Appendix B) in their classes to gather information on what they expected from the course being taught, what goals they had for themselves, and what knowledge they hoped to have acquired by the end of the year. The survey was used to collect data on student motivational levels to examine for possible limitations at the end of the study.

The final stage in the study was examining the written materials collected from the teachers. The researcher examined lesson plans, tests/quizzes, and homework assignments that the selected teachers handed out to their students throughout the year in both the inclusion and non-inclusion classroom. The last artifact that was collected was the Course Objective

Questionnaire (Appendix I) that focused on the student's development in understanding and comprehension of each objective taught in the Earth Science class. After all the data was collected the researcher analyzed the data and presents the findings in this study.

Method

Participants

The two participating teachers taught inclusion and non-inclusion sections of the same course and level in Earth science. Thus the general-education curriculum being taught was consistent in all classes. It eliminated variables other courses or teachers might have added that could have influenced or changed the data being collected. Focusing on two teachers produced a more consistent pool of data.

The students' participation was accomplished by having the selected teachers hand out a basic, anonymous survey that examined their motivational level and tolerance of others' differences. The data from the surveys was used to eliminate any possible limitations in the study.

Instruments

Questionnaire Protocol

The researcher designed a questionnaire (Appendix A and B) for the data-gathering process to get qualitative data that was sent via email to the selected teachers and given by them to their students at the start of the 2014-2015 school year.

To validate the questionnaires, a pilot study was done with a panel of experts. The questionnaires were given to five professionals in the education and psychology fields. The experts were asked to read the questionnaires to validate that the teacher questionnaire really did allow for data to be collected on teacher motivation, the teacher's expectations for the class, and

any previous experience with teaching special-education students. The expert panel reviewed the student questionnaire to validate that it gave insight into the students' motivational levels and their tolerance of differences. The feedback from the expert panel allowed for any necessary modifications or changes to questions require for clarity and to validate that the questions were appropriate for this study's research goals.

The primary aim of the questionnaire was to determine the expectations for the science course and how having special-education and general-education students in the same class affects the general-education curriculum being taught. The questionnaire used a combination of closed questions and open comments. A closed question has pre-coded answers. The simplest is the dichotomous question to which the respondent must answer yes or no. This questionnaire also used open-ended questions to gather information about the personal beliefs and the aspirations of the students and teachers. Through the use of closed questions, the researcher was able to limit responses to the scope of this study.

The survey questionnaire achieved the main objective of the study. It was distributed as a pre- and post-survey. The students in the participating teachers' classes took a simple survey. The questionnaire given to the teachers assessed their motivation, expectations of the class for the year, and comfort with teaching special education students. The student questionnaire aimed to assess their interest in the course, their expectations for the year, and their comfort with special education students.

The questionnaire was structured so that respondents were able to answer it easily. Thus, the questionnaires used a Likert format with a five-point response scale. A Likert Scale requires the subject to indicate his or her degree of agreement or disagreement with a statement. In questionnaire for this study, the respondents were given five response choices. These options

serve as the quantification of the participants' agreement or disagreement on each question.

The survey information was examined and used to guide monthly discussion sessions with teachers as a second type of data collection. The initial discussion group was structured with set of questions for the teachers (Appendix C) to gather information on job satisfaction and experience working with identified special-education students. There was also a structured closing discussion group at the end of the year (Appendix D) that gathered information on how they felt the curriculum was met by all their students and to assess any differences they noticed between the inclusion and non-inclusion classrooms in regard to content taught. The differences that focused on were: whether their classes were always on the same topic, were at the same point in the curriculum, and whether the teachers left out any information in certain classes or altered the activities. Any of these changes would have involved modification of the set curriculum handed to the teachers at the start of the school year.

One last questionnaire administered at the end of the study was the Course Objective questionnaire (Appendix I). The course objectives were given at the start of the year to allow the researcher to understand what curricular content the science course was to cover. At the end of the study the same course objective sheet was given back to the teachers with a likert scale attached to each objective. This was used to determine what level of academic understanding the students obtained on each course objective in both the inclusion and non-inclusion classes.

Observation Instrument

In this study data collection was done by observing classroom instruction, reviewing submitted lesson plans/tests/quizzes/homework assignments, and teacher discussion groups throughout the school year in both types of classrooms. The purpose of the classroom observations was to note any curriculum differences in presenting the science content to

inclusion and non-inclusion classrooms at the secondary level.

Danielson's Framework for Teaching (FFT) (Danielson, 2012; MET, 2010) was used as the classroom observation instrument. The FFT is a set of 22 research-based components (Danielson Group, 2011). The components are broken down into four clusters that examine teaching responsibility including planning and preparation, classroom environment, instruction, and professional responsibilities, as shown in Table 1. Table 1 details the components of teacher responsibilities as described in the FFT protocol.

This researcher utilization of the FFT observation instrument took place in two steps. The researcher observed two teachers teach secondary science in a non-inclusion classroom for 42minutes and then observed the same teachers in an inclusion science class in a two-day period three times over the course of the 2014-2015 school year. While observing the classes, the researcher recorded information on the FFT observation sheet, focusing on only one of the four clusters: instruction.

Table 1

FFT Clusters and Categories

Domain 1: Planning and Preparation	**Domain 2: Classroom Environment**
1a Demonstrating Knowledge of Content and Pedagogy 1b Demonstrating Knowledge of Students 1c Setting Instructional Outcomes 1d Demonstrating Knowledge of Resources 1e Designing Coherent Instruction 1f Designing Student Assessments	2a Creating an Environment of Respect and Rapport 2b Establishing a Culture for Learning 2c Managing Classroom Procedures 2d Managing Student Behavior 2e Organizing Physical Space
Domain 3: Instruction	**Domain 4: Professional Responsibilities**
3a Communicating With Students 3b Using Questioning and Discussion Techniques 3c Engaging Students in Learning 3d Using Assessment in Instruction	4a Reflecting on Teaching 4b Maintaining Accurate Records 4c Communicating with Families 4d Participating in a Professional

3e Demonstrating Flexibility and Responsiveness	Community 4e Growing and Developing Professionally 4f Showing Professionalism

Source: Danielson's Framework for Teaching, 2013

Discussion Session Protocol

The researcher held monthly discussions with the two participating teachers. The discussion sessions were designed to allow the teacher participants to become co-researchers in the study. The discussions gathered information on the teachers' feelings about inclusion and to assess whether there were any curricular differences between their inclusion and non-inclusion classes. The sessions gave the teachers a place to share any struggles they experienced in modifying the curricular content for students in their different class structures.

The discussions were held face to face twice to allow the researcher to take anecdotal notes to see if body language matched the spoken words and to monitor for any small changes to the curriculum that might have been missed Justin the review of the paperwork submitted. The teachers had signed a consent form allowing the discussion sessions to be recorded for later review. The sessions were transcribed for any patterns in the discussions that occurred over the course of the year. The rest of the discussion sessions took place through email chains due to external factors limiting the face-to-face session that could occur.

Submitted Document Review

The study document review involved examining instructional documents used for teaching both classroom types, including student assessments, lesson plans, and homework assignments. For this section Research Question 1 and 3 provided the focus for the review of the class materials:

1. Does the pace or speed that the teacher is going regarding dissemination of information differ for content in an inclusion and a non-inclusion class?
    a. Are the inclusion and non-inclusion classes at the same point in the curriculum?
    b. Are the inclusion and non-inclusion classes getting the same time to practice concepts that are taught?
3. Are there differences in the instructional strategies implemented in inclusion and non-inclusion classrooms by the teacher?

The review of instructional documents allowed for additional insight into the curriculum being taught in the science classes, permitting observation of curricular differences between the two class types. Any differences between content being presented, homework assignments, and/or assessment expectations regarding question selection and choices were noted.

The review of the class documents was used to triangulate the data with other qualitative research methods. Eisner (1991) discussed how the use of multiple data sets allows for greater reliability through triangulation of research data. The submitted documents, discussion group observations, and classroom observations data were reviewed for themes and patterns regarding curricular changes that took place in inclusion and non-inclusion classrooms.

Data Analysis

The theoretical approach for this study was phenomenological in nature. As Creswell (2009, 2013) shared phenomenology is an approach that looks to develop an understanding of the essence of the experience. It is looking at what something really is in its true state. This study was looking to examine what each participant was experiencing as they taught within an inclusion and non-inclusion classroom. Through the teachers experiences, discussions, collected materials and assessments used the researcher was allowed to build a strong understanding of

what inclusion currently is within a school district.

To truly examine what was occurring the study was conducted through qualitative measures only. It was looking to interpret what was happing with inclusion and the general education curriculum in the natural setting it occurred in (Denzin and Lincoln, 1984, 2005; Creswell, 2009, 2013). To gather the data a four case study approach was utilized. A case study allows the researcher to go in-depth with the issues in a closed system over a period of time (Creswell, 2009, 2013). The current study was a longitudinal examination of each classroom. Each class became its own case study allowing for examination of four cases and then cross examination to identify themes, patterns and differences among the different class types. After the information was coded, patterns were generated, and cross comparison occurred it allowed the researcher to build a clear picture of how inclusion was impacting the general-education curriculum.

Observation Data Analysis

The two participating teachers were observed teaching one inclusion and one non-inclusion section of a secondary science course three times in the school year. The classes were 42-minutes in length, producing four-and-a-quarter hours of observation per teacher. The observations took place at pivotal points in the school year--the start, the middle, and the end--to allow for close monitoring of the content pace that was being presented. The teachers were informed on what was specifically being examined during the observations to decrease any behavioral and/or content change that the teacher could have made to alter the observational data being collected.

The researcher used Domain 3 of Danielson's Framework for Teaching (FFT) observation instrument to monitor the teachers' instruction given to the students, to identify any

possible differences between the curricula presented to both classes by the teachers. The instruction was examined for the types of question and discussion techniques utilized, how the teacher engaged the students in learning, how assessment was used in the instruction, and what responses were given to the students during the classes.

Discussion Groups Data Analysis

Each discussion session was recorded and transcribed. There were no set questions to follow during the discussion sessions, but they were designed to allow the teacher participants freedom to openly share the accomplishments and struggles they faced in trying to keep their classes at the same place in the curriculum.

Throughout the discussion sessions patterns of responses were identified. The researcher reviewed the transcribed sessions several times over the course of the year to discern connections or themes that were appearing as the discussion sessions progressed. The themes were identified and supported through participants' information and quotes.

Document Data Analysis

The submitted documents review involved the researcher using content analysis. The information was placed in categories related to the research questions. After scanning the documents, the researcher went back to each document to examine for details and information that related to the research questions. The final step was to interpret the submitted documents.

Summary

The methodology for this study was formulated from specific procedures in focus groups and observations. The initial surveys administered were also taken into consideration in developing the methodology. Chapter Four will report on the data collected.

CHAPTER 4

DATA ANALYSIS

This research study examines the relationship between inclusion and the general-education curriculum taught in an inclusive classroom at the secondary level using the qualitative approach of the descriptive research method. This chapter provides the data analysis and findings.

Two teachers were interviewed and observed throughout the course of this study. The study explores how they taught the general-education curriculum in one inclusion and one non-inclusion class each and whether they modified the general-education science curriculum in any-way. Here, the two teachers are named Eli and Pat to hide their identities.

In this chapter, the researcher shares the conversations and actions of two teachers through the qualitative techniques of observations of their classrooms, interviews, focus groups, and artifacts of their teachings. At the beginning of the study, a motivational survey was administered to the students in the science courses that were part of the study to gain insight into the students' interest in the course. The two teachers' profiles included a mixture of the researcher's reflections and thoughts about the observed classes and responses to focus groups. Each teacher's beliefs and practices were woven into the text with direct quotes.

The teacher profiles included personal beliefs on inclusion and how students with special needs impact their abilities to teach the general-education curriculum. Classroom observations used Danielson's Teacher Evaluation Model and focused on Domain three: Instruction. The classroom observations were recorded as events occurring moment to moment. No chunking of time was done during observations because some of the classrooms were so active that chunking would not paint a full picture of the class.

Teachers Profiles

Eli

Eli had been a science teacher for over 10 years and appeared to really enjoy teaching all the students who were assigned to his Earth Science classes. This is also indicated by the teacher saying that he was "very satisfied" overall when asked about his job on an initial questionnaire. It was obvious that he enjoyed his career and took his job as an educator seriously. Eli was on time for his classes and started them off with "At the Bell activities," questions or simple tasks that students completed when they entered the room to prepare for the day's lesson, prompting the students to transition into the science class. Eli did put time limits on discussion-group questions because this kept them focused. This demonstrated Eli's professionalism in making sure that his students were meeting expectations in a timely fashion.

Behaviorally, Eli was seamless in managing the students. He used a technique where if students were not doing an appropriate behavior Eli would make a simple statement "strike one" and explain what the strike was for. If Eli had to get to strike three, the whole class would share what the consequence would be with the whole class, never singling anyone out but making the expectations very clear for all the students.

Eli understood the functional levels of each course and planned the visuals to meet the students' educational needs. He would not use the same visuals in both of the classes, even though they were covering the same content. He explained that the different visuals were to allow each class to be academically successful and challenge them academically. Eli never appeared to push the students to the point of frustration. The students seemed to respect Eli's teaching methods and expectations without questioning the reasoning for being asked to complete a task or answer a question.

Eli appeared to have background in working with inclusion students, as evidenced by his calm in dealing with disruptive behaviors in the classroom and by the teaching approaches he demonstrated. He did not raise his voice when students were speaking out during class but used a simple verbal behavioral technique to manage the group. He did not single out a specific student but addressed the class as a whole, taking away any stigma that might have been placed on an inclusion student.

The make-up of Eli's two selected classes were as follows:

- Inclusion classroom make-up: 26 students total, 11 students with IEPs and 1 student with a 504 = 46.2% included students
- Non-included classroom make-up: 22 students, 3 students with IEPs and 1 student with a 504 = 18.2% included students

Pat

Pat had taught science since the start of her teaching career of 6 years. Pat appeared youthful and very interested in making science fun for her students. In class, Pat prepared lesson plans that laid out the content that would that day and had many handouts for the students to work from. This gave them visual aids for the academic content. Pat circulated around the room when activities were occurring, trying to offer assistance to any student who was struggling with the content.

Pat was eager to have the students learn the required content through hands-on labs and activities, but struggled to maintain the focus of the students. Most of Pat's time was used to redirect students to the required task. Pat became visibly frustrated with the distraction in the classes and raised her voice to particular students who were behaving poorly. She was distracted during the period by student behaviors and at times needed to refocus to get back on topic. This

constant disruption in Pat's room limited the amount of content being taught. The same information was covered repeatedly without moving on to new material because the students were not demonstrating understanding of the previously taught concepts.

Pat was happy to share the special-education training that she had and felt that it did assist her in planning and teaching the science content. But she felt that the courses she had taken did not prepare her for the category of students included in her general-education courses because she felt that learning disabilities are very different from emotional disabilities. The material given to the students was not modified for each of her two classes that were observed. She had the same workload and content-knowledge expectations for each class.

The make-up of Pat's two selected classes were as follows:

- Inclusion classroom make-up: 22 students total, 4 students with IEPs, 2 students with Chapter 15s and 1 English Language learner (ELL) student = 31.8% included students
- Non-included classroom make-up: 19 students, 1 students with = 5.3% included students

Case Study

This is a year-long, four case study of two teachers in a suburban junior-high school in northeastern Pennsylvania, and includes focus groups, staff surveys, and three class observations (start, middle, and end of the school year). The two teachers selected for the study taught the same Earth Science course to inclusion and non-inclusion classes. Both teachers volunteered to take part in the study. They worked well in focus group questions and did not change their teaching methods during observations. They provided the researcher with copies of lessons, handouts, tests and quizzes and took part in discussion forums.

Below is a description of the student motivation surveys, interactions with the teachers, and the findings therein.

Student Motivational Survey

At the start of the school year both teachers handed out a motivational survey that their students completed anonymously. The survey asked the students to express their motivational level for the course, whether they liked science, and their tolerance for differences with others. The results of the survey demonstrated that both Eli and Pat's classes had similar feelings on the topics. In the non-inclusion classes, the students self-reported as more motivated and liked science. The students were divided in their acceptance of differences in the class population. They reported being willing to help other students understand the material but would rather work independently because differences in others did bother them somewhat. However, in the inclusion classes, the students reported being split on their motivational level and liking science as a course. In addition, the students were divided about their acceptance of others and reported that differences bothered them to the point of frustration. A student's motivation could influence the amount of content retained due to interest levels in the topic and motivation to complete the work assigned.

Research Questions

There were four research questions in this study:

1. Is there a difference in the assessments, formal and classwork, used in an inclusion and a non-inclusion classroom?
2. Does the pace or speed that the teacher is going regarding dissemination of information differ for content in an inclusion and a non-inclusion class?
    a. Is the inclusion and non-inclusion class at the same point in the curriculum?

b. Is the inclusion and non-inclusion class getting the same allotment of time to practice concepts that are taught?

3. Does the teacher's attitude towards inclusion, as measured by the survey questions and measured by interview questions, change the approach to teaching the course curriculum in an inclusion and a non-inclusion classroom?
4. Are there differences in the instructional strategies implemented in inclusion and non-inclusion classrooms by the teacher?

Is there a difference in the assessments, formal and classwork, used in an inclusion and a non-inclusion classroom?

In this study, artifacts from the classroom teachers were collected throughout the 2014-2015 school year. The artifacts included lesson plans, handouts, labs, tests, and quizzes (modified and non-modified). The artifacts were then divided into two main groups: teacher artifacts and student artifacts. Teacher artifacts were lesson plans and test/quizzes, which were primarily used to express the teachers' expectations of the students and content knowledge checks. The student artifacts were anything distributed to the students, such as labs, worksheets, note packets, and any graphs/charts, that they had to complete in class to practice concepts.

Examination of the teacher artifacts showed slight modifications for the two classes. Eli's tests were modified through elimination of questions, meaning that the non-modified tests/quizzes had more questions focused on a content area compared to the modified tests/quizzes. An example was a question in an oceanography test. The non-modified test asked the students to choose one of three answers that was the best fit for the question, "What is the **best** explanation for the Indian Ocean being the *warmest* ocean?" On the modified test this question was not presented to the students. On some of the tests the same question was asked on both test types (modified and non-modified), but the wording was simplified on the question or

the modified test provided information that could help the students answer the question. A final difference on Eli's tests/quizzes was their images. At times the images that the students needed to interpret were simplified to make what was being assessed clearer.

Pat's modified and non-modified tests/quizzes had few differences. All the questions were the same, but they were divided to incorporate chunking procedures with word bank questions. For example, the non-modified tests had students answer seven questions involving choosing the correct vocabulary in a section of the test, while the modified test had only five vocabulary words. The only other modification to Pat's tests was that the modified tests had fewer multiple-choice answers. Instead of four options to choose from' the modified-test-taker had only three reducing the odds of students selecting an incorrect answer.

The last teacher artifact that was collected and examined was lesson plans. Pat created lesson plans for each week using the standard lesson plan format, while Eli did not follow the standard lesson format that the district had established for the teachers. The standard lesson plans gave the state objectives for each concept that was to be taught and a basic description on what the day would be about. The assessment of how the students were progressing each day was to be their participation and answers to questions. This assessment approach did not emphasis what participation was to look like for each day or whether the students were given points their participation and/or responses to questions. Without clear assessment expectations, Pat was unable to truly determine what content the students absorbed on each lesson, limiting her ability to move forward at a pace appropriate for the students. Eli chose not to use the standard format did create lesson plans, which served as a guide for him to know where they were going with the content but were not specific on the course objectives being taught or materials being used. Eli's method allowed them the freedom to move at the pace the student required without setting a

definitive action plan for each class day.

The student artifacts were reviewed to identify the differences in the content taught in each teacher's class. The three areas looked at in the artifacts were complexity of the handouts, work expectations for the students, and testing expectations regarding absorption of content.

To examine the complexity of the materials for each class (inclusion and non-inclusion) that the teacher taught, the reading levels, depths of questions asked in the handouts, and how the handout was structured visually were reviewed. Upon analysis of the artifacts, it became clear that each class was given the same handouts. The students with IEPs were not given specially designed worksheets. All the worksheets were written at grade level using scientific vocabulary when appropriate. The students were exposed to the course content and vocabulary in all the artifacts. When asked why all the artifacts were identical for both class types, the teachers said that all of the students were able to complete the worksheets. This was expected of all students with learning disabilities, especially students who were included in the general-education curriculum.

The course labs were the same for all the teachers' classes. Eli said that more hands-on labs needed to be created and implemented for the course, while Pat appeared to use the labs to reinforce concepts. Both Eli and Pat did have students who required more explanation of how to complete the lab tasks, and one had to take her inclusion class step by step through the one lab that was observed. Each group of students required a large amount of one-on-one time with the teacher in the inclusion section to remain on task, to answer questions, follow the lab directions, and even to generate answers.

Work expectations and depth of content knowledge were intertwined throughout the study through discussion group questions, observations, and artifact collection. It became clear

that although the students were given the same handouts in every class, expectations were different regarding the depth of content knowledge. Pat shared during an observation that she wanted the students to try to answer the questions; however, they were so frustrated with constant behavioral issues that were occurring in their inclusion class that she had to use leading questions to get students to participate. On the other hand, in the non-inclusion class the students were expected to give details on how they knew the answer based on lab results. Eli said that expectations of content knowledge were the same for all his classes because even with the simplified visuals given to the inclusion class the students were learning the same curricular content as in the non-inclusion classroom.

Both teachers started the school year with clear expectations for the students, giving them all a course syllabus that explained what concepts they would be covering, how they would be graded, and their responsibility for work completion. Though the expectations for work completion did not change as the year progressed, the teachers' increased knowledge of the students' abilities to grasp the concepts modified their expectations. Eli learned what visuals were best for each class type, presenting simplified visuals for the inclusion class so they could understand the concept better. Pat learned that repetition was needed to teach the concepts and that the behavioral interruptions in the inclusion class would be a challenge to work though. The teachers had to modify their presentation of the material to each class type as the year progressed. Both Pat and Eli noted that they found in their inclusion classrooms they could not go as "in depth" with the content as they could with their non-inclusion classes.

When both teachers were asked, "Do you hold different expectations for the student in your two classes (inclusion and non-inclusion) from the start of the year to where you are now" at the last discussion session, both gave similar a response. Eli said:

> In general, my expectations are the same. I know in reality each class will each have students with different motivation levels. The regular education class is naturally going to go deeper into content, but the inclusion class will still learn many skills.

Pat said:

> Yes, at the start of the school year both classes were motivated, asking higher-level thinking questions, and working hard on their assignments. Once they realized that the couple of students that disrupted class on a daily basis didn't get any consequences [from administration after I wrote them up] they stopped caring as much and started mimicking the behaviors of these students.

The teachers said that they had to modify their expectations for the inclusion class not by content but by depth of knowledge. Over the course of the school year, the teachers learned which classes could handle more in-depth discussions about the concepts being taught and which groups needed just the basic information. The teachers changing the depth of the content taught supports previous research findings that the two different class types will be limited in the content they have been exposed to, requiring changes in the curricular content (Pawlowicz, 2001).

Both teachers said several times over the course of this study in their discussion group answers, personal conversations, and during the observations that their inclusion classes had added challenges that impeded dissemination of information. Some of the challenges were behavioral issues and limited background knowledge due to poor attendance. These extra challenges in the inclusion class required that more time be spent on repetition and re-teaching of information in order to move forward in course content.

This could be impacting the general-education curriculum that is being taught in the

inclusion classroom, according to Bandura's Social Learning Theory. Teachers are changing their initial expectations as the year progresses and modifying their teaching approaches, which in turn changes the retention of content by the students (Woolfolk, 1998). In the inclusion classroom the students observed how the teacher responded to them and through discussions with peers they could have assessed that their work was at a lower level. This examination could have lead to the students realizing that they were not getting the same curricular content and allowed them to make a choice to not perform at their true academic level.

Does the pace or speed that the teacher is going regarding dissemination of information differ for content in an inclusion and a non-inclusion class?

Teachers are given a course objective list when they are assigned a course that tells them what topics they are to cover in the course to prepare the students for future classes, prepare for standardized testing, or educate them on a particular topic. This study examined teachers of an Earth Science course at the junior-high level. This course built upon previously taught concepts about the earth such as the solar system, the environment, and earth's natural structures. The course objectives contained seven units including The Nature of Science, The Earth and its Systems, Meteorology, Geology – Rocks and Minerals, Geology – Plate Tectonics, Volcanoes, and Earthquakes, Earth's Water Systems and Astronomy (Appendix K).

Each unit had a set of objectives on what concepts were to be taught. Most of the units had at least 12 objectives to cover before moving onto the next unit. Each objective required the teacher to teach, explain, and model to achieve student understanding. As previously discussed, Bandura's Social Learning Theory states that students learn through modeling what they observe, implying that the teachers must demonstrate the concepts in several different ways to allow for all students to develop understanding.

Throughout the study, a theme appeared when regarding curricular content and pace. Both teachers involved shared how they struggled to keep both classes at the same point in the curriculum. Both expressed their concern about keeping their inclusion classes moving forward in the curriculum due to the inclusion class requiring re-teaching of basic concepts. As Eli said:

> I get through all the information every year but sometimes can't cover the material as in-depth as I would like to because of spending so much time re-teaching material that we have already covered. I want them to be able to grasp the basics before moving on to more difficult content.

Pat had the same feelings when discussing the pace and speed of information dissemination, noting:

> My 9th period [non-inclusion] retains information much better than my 3rd period [inclusion]. I have to re-teach the information often, or they won't remember it. Even the basic information they have trouble with. In my 9th period I re-teach some information, but it is typically the difficult content, not the basics. Even from chapter to chapter, my 9th period will be able to apply information from the previous chapters to the current content, whereas my 3rd period won't be able to apply the information without me going over it again.

Both teachers worked to teach each class (inclusion and non-inclusion) the same content, but focused much of their time on teaching basics repeatedly in the inclusion class. This does not fully support the research done by Bulgren et al. (2006), which indicated that general-education teachers are only placing emphasis on basic content for students with disabilities. Nonetheless, it does demonstrate that much of the time the general-education teacher is teaching the basics to the students in the inclusion classroom and expecting them to retain that information, while in

their non-inclusion classroom they get to go more "in depth."

Several times throughout the course of the year, Eli and Pat spoke of how they worked to advance the students in their science classes but that the re-teaching of concepts took up a large part of their instructional time. Pat stated "I have to re-teach information often, or they won't remember it. Even the basic information they have trouble with." Both felt that a large part of the re-teaching stemmed from having to take care of distractive student behaviors. Eli and Pat spent a large part of their class time in the inclusion classes redirecting student behaviors, which takes away from teaching the lesson to the whole class. The teachers were asked, looking at classroom disruption "what class requires more cues to stay and/or return to task and how does this impact your daily ability to deliver the curricular content?" Eli said, "The IEP-packed class has by far more disruptions. Content is often rushed, delayed to next day perhaps." Pat said, "[T]he class with many IEPs has a lot more classroom disruptions. In this class, many students lose focus very quickly and needed to be redirected. This slows down the delivery of content significantly."

Research has demonstrated that if there is a mutual understanding and dedication to co-teaching, when a special education and general-education teacher work together in a classroom, there are positive outcomes for all the students involved (Malian and McRae, 2010; Spence, 2010). However, Pat and Eli do not collaborate with any special-education teachers on their inclusion classrooms and work independently to make the accommodations and modifications required for each student with an IEP. Pat and Eli also did not collaborate with each other on whys to teach their inclusion classrooms the content. They were working independently from each other even teaching the same course and curriculum creating isolation for themselves.

In the absence of collaboration each teacher needed to create lesson plans, forcing each teacher to figure out independently what he or she is going to do to accommodate the lessons to

reach all students in the classroom. When asked the question, "Do you find it harder each year to teach the curricular content as the rate of included students continues to rise?" both teachers responded that it was. However, they had different feelings about why. Eli felt that if he covered the same amount of material each year, "there's a chance less sinks in." Pat felt that it was more about covering the required course content:

> Yes, it gets more difficult every year to get through all the curriculum. I don't think I will get through all of it this year because of all the testing and because of the pace that my students can work at.

Eli expressed similar concerns regarding testing during one of our focus groups, speaking of how in the current year it was challenging to cover the content due to having "three days of science given up this year to take CDTs [Classroom Diagnostic Tests]. We are also expected to give quarterly exams, a loss of four more days due to testing. Content has to be trimmed to suffice."

This "trimming of the content" is done in both the inclusion and non-inclusion classrooms due to the state- testing and district-mandated testing. The concern came in addition to Eli and Pat already struggling to move forward with content due to re-teaching in their inclusion classroom and only being able to focus on the basics. The students in the inclusion classroom were at a disadvantage from the start because they were not receiving the same curricular content, which in turn could limit their progress through more complex science courses.

The general-education curriculum is a set of concepts pertinent to each course to prepare the students for future courses. If the content is being reduced due to constant repetition of concepts, then the students are not receiving the same general-education curriculum because of the type of class to which they have been assigned. All students being taught the same

information is highly unlikely in an inclusion classroom with curriculum depth being limited for the students (Kozik et al., 2009; Watkins et al., 2008). Pat and Eli both said throughout the study that they worked to get through the curriculum in each class but that the depth of the knowledge they could go into was limited in their inclusion classrooms.

Does the teacher's attitude towards inclusion, as measured by the survey questions and measured by interview questions, change the approach to teaching the course curriculum in an inclusion and a non-inclusion classroom?

At the start of the school year, both Eli and Pat felt that they were prepared for their inclusion and non-inclusion Earth Science classes. Both had taken courses in special education and were knowledgeable about how to teach their students in all classes. Eli's training program helped to demonstrate how to create differentiation in the lessons. "They were effective at giving me the tools to address the general learning disabilities." Pat was proud to discuss how her differentiated instruction course had focused on inclusion in the classroom and how it had helped with modifying assignments to teach students of all levels.

At the start of the study, the teachers were administered a Staff Interview Questionnaire (Appendix A) to complete to provide a better insight into their general beliefs about their ability to teach students with special needs. This was done to assess comfort with teaching the general-education curriculum to an inclusion classroom. Both Eli and Pat were positive in answering the initial questionnaire. As their answers to the questions demonstrated, they were positive in their approach to teaching all students, but they already had some background on changes to their expectations with the inclusion classroom. The teachers were asked, Do you feel that teaching an inclusion section of math/science has modified or changed the content that you teach your students? Eli said, "It hasn't changed the content, per se, since state standards apply to all

students. However, it certainly limits the depth of the content I can present to an inclusion class." Pat said:

> I feel that I have to move at a much slower pace because these sections have students of all different needs – higher and lower abilities. I teach these sections the same basic content; however, in higher-level classes you can elaborate and build on this content much more.

Even without the teachers' knowledge, they repeat the theme that keeps appearing in the data of "basic" information being presented to the inclusion classroom but not being able to go "in depth" into the curriculum. Both Eli and Pat repeatedly stressed this point through focus group answers and through observations in the classroom. The language and examples presented in each type of classroom during observation days differed noticeably. In the non-inclusion classes, more discussion would take place with higher-order thinking occurring prompted by teacher questioning. In the inclusion classrooms, the questions were more straight-forward, almost guided, to direct the students towards a correct answer. To the question, "How has inclusion in education affected your class preparation or class maintenance for both your inclusion classes and non-inclusion classes?" Eli said, "After creating modified tests and copies (or variations of) notes, the prep is not significantly affected. Maintenance is more challenging in inclusion classes. There are more issues/disruptions, less homework completion, and frequent absences."

Pat said,

> Preparing for inclusion classes takes a great deal of time because there are students of different ability levels in these classes. It is difficult to plan activities that will be at a level appropriate for all students. However, all students are different – even in

non-inclusion classes. So I try to reach all students and cater to all of their needs. Maybe it's an adjustment in an assignment or maybe it's a different way that I am explaining the concept to that student.

Each of the teacher participants had a similar yet different take on what the word "maintenance" was and/or meant in their classrooms. Eli viewed maintenance as classroom maintenance, keeping the students focused and progressing. Pat viewed maintenance as the pre-class preparation of materials and how to teach each student. It did not matter how each participant viewed the word maintenance in the question because they had similar attitudes that they knew the workload would be greater in an inclusion classroom. This also did not deter them from trying to do their job of teaching Earth Science to any student they were assigned. This was evident in both teachers responding on the initial survey that they were "very satisfied" with their jobs as teachers.

Even with the teachers starting off the year satisfied and ready to take on both class types, frustration began to appear in their answers to questions as the year progressed. Eli and Pat began to share obstacles with teaching inclusion classrooms early in the school year. These obstacles were due to the demands placed on them by all the different IEP accommodations that were required and the students' retention of the material taught. When questioned on where they were noticing the largest difference in classes since the start of the year both teachers indicated it was "their inclusion classes." Pat said that the inclusion class was "much lower" in academic behaviors and clarity of information compared to the non-inclusion class. The class was also "having difficulty retaining [content]" and struggled with "reading the material." Eli discussed how even with the normal drop-off in grades from the middle to the end of the school year that the inclusion class had struggled with having lower grade averages even with "seven modified

tests given."

Towards the end of the school year the teachers were asked specific questions in the discussion session to note any changes in their attitude towards inclusion classes. One of these questions was "What do you feel are the benefits and drawbacks for inclusion when focusing on the students learning of the course content?" Eli responded:

> The benefits for the included student may be from the different levels of insight that other students have to offer. Drawbacks for the included student will be that the pace of learning may exceed their capabilities. Drawbacks for other students include less attention from teacher [because more is given to included students], content reduction, time increase per content, which may lead to boredom.

Pat said:

> The inclusion students can benefit from having general-education students as models of behavior and also benefit from the class discussions with general-education students. The drawbacks are that both groups are held back in a way. The inclusion students need more one-on-one time, so smaller classes would be best for them. They also tend to need more help understanding the content, so if they were in a separate class, I would be able to tailor the class more to their needs. With the general-education students, they are usually waiting for the inclusion students to finish assignments and don't receive as much individual instruction because I am working with the inclusion students. I also feel like I am holding back the general-education students because I would be able to go more in depth with concepts and do more advanced activities with them if they were separate.

Both teachers remained positive towards the end of the year with teaching inclusion and non-inclusion classrooms, but a change had occurred from their initial enthusiasm. As the above

answers demonstrate, both teachers were starting to discuss how they did not feel they were meeting the needs of all the students in their inclusion classroom. As with anything, humans feel self-efficacy is important for satisfaction in what they are doing. For teachers, this self-efficacy comes from how the teacher relates the ability to teach all students, and if a teacher is struggling to teach the curriculum, it will negatively impact instruction (Ruma-Viel et al., 2010). Social Learning Theory discusses how a teacher's influence on teaching the curriculum goes hand and hand with how a teacher feels about his or her ability to communicate the curriculum content to the students (Bandura, 1997). Eli and Pat appeared to doubt that they got the true curricular content to all their students in each class. This doubt stemmed from both teachers having to focus a large amount of time teaching basics and taking care of included students' needs. Eli stated "other students included received less attention from the teacher (because more attention was given to included students), content reduction time increased per content which leads to boredom" as he spoke of the general education students in the inclusion classroom he taught. This quote emphasizes the struggle that the teachers were experiencing when it came to feeling they were reaching all students in their class.

The students in the non-inclusion class had lectures and activities that delved deeper into the curricular content, requiring higher-order thinking and processing. The inclusion classes stayed focused on the basics of each topic, limiting the curricular content taught to the all the students. This indicates that the curriculum was altered depending on the general-education class the students were in. This assessment comes from the fact that in the inclusion class the curricular content just skimmed the surface, while in the non-inclusion classes the teaching content went in depth.

One interesting aspect of examining the teachers' attitudes towards inclusion was how the

teachers appeared guarded. As this study advanced the teachers appeared to struggle to remain positive about inclusion. The teachers would begin to answer a question honestly, but would change what they were saying at times by either rewarding or hesitating to answer. This behavior appeared to surround discomfort and concern that they could not be honest about their feelings on inclusion. An example of this behavior was when Eli stated, "Many IEPs in class is a challenge, but it is also interesting." Eli started out expressing his true emotion of the challenge of having students with IEP's, but quickly switched to ending with a positive and would not explain why it was challenging. There appears to be this unspoken rule that a professional cannot hold negativity towards special education and if they share how they are truly feeling there could be negative consequences. This resistance to be open and honest could be limiting the research that can be gathered on the teacher's true attitude with teaching inclusion and limits the progress that can be made with developing a model of working inclusion.

Are there differences in the instructional strategies implemented in inclusion and non-inclusion classrooms by the teacher?

The final area that was being examined for differences in an inclusion and a non-inclusion classroom were the instructional strategies the teachers implemented. Every teacher realizes that each student learns differently and that the teacher needs to approach teaching the curricular content in different ways. The strategies that the teachers choose can alter the curriculum being taught in several areas, including how much of the curricular content is taught in the course of a year and the level of information being taught. It also includes the approach that the teachers take to teach the curricular materials. No single instructional strategy is best practice, but variation in how to teach is a key element in getting through to all students.

Both teachers were asked what instructional strategies they implemented in their

classrooms. Eli said that "lecture, hands-on, student-centered" was preferred and he would use "independent work with the more student-centered" groups.

Pat adopted different approaches in each class, such as skeleton notes, lectures, and hands-on activities, because:

> In my inclusion class, students don't like participation, so I have to ask specific questions about the topic and prompt/guide them to the answers. The inclusion class struggles to answer basic questions, where my non-inclusion class answers them easily and then moves on to their own higher-level thinking questions about the content.

Each teacher said that they do try to utilize hands-on activities but that time constraints with making accommodations to their lessons and activities limits their ability to find/modify labs for each student's needs. Pat talked about wanting to "do more hands-on activities and individual projects;" however, this takes time to allocate for some curricular topics that she does not have. Eli expressed similar feelings, stating, "[T]he big one is to add more hands-on labs, but I need time to develop and figure out where to implement."

As teachers learn about their students throughout the year they work to implement teaching strategies that will assist the students in developing understanding of the curricular content. This task is hard enough in any general-education course, but with the demands of monitoring all the students with IEP's needs, it becomes overwhelming (Almog, 2008; Conderman & Johnston-Rodriquez, 2009; Daam, Beirne-Smith, & Latham, 2001; King-Spear, 2008; Leyser & Tappendorf, 2001;). As the teaching demands increase, a teacher's self-efficacy is affected, leading to a concern that he or she will not be able to do the task assigned properly (Ruma-Viel, 2010).

Though the teachers did not say that they were unsure of their abilities to teach all the

students in their inclusion and non-inclusion classes, it came through in how they expressed their frustrations and struggles. Both Eli and Pat repeatedly talked about not being able to delve into curriculum at a deeper level and that they wanted to do more with their students but could not due to the "basics" or pre-requisite skills that should have been introduced earlier in school being a struggle. As research has shown, the teachers in the study were not alone in these feelings of self-doubt and strain due to the demands of inclusion (Connor & Ferri, 2007; Leyser & Tappendorf, 2001; Pawlowicz, 2001; Ravitch, 2002).

Amount of content taught:

As has been mentioned several times, the amount of content that both teachers got through varied greatly between their inclusion and non-inclusion classes. The teachers repeatedly mentioned the theme of "depth of content" as a difference in their instruction. The inclusion classes required more repetition of basic concepts, leaving less time to move into deeper exploration of the curriculum. Eli explained during a discussion session that though he held both class types to the same expectations, he realized that each class had a different motivational level. "The regular education class is naturally going to go deeper into content, but the included class will still need to learn many skills." Pat had a similar feeling regarding the amount of content that would be taught in the different classes, but her expectations changed as the year went on due to other situations such as discipline and testing.

> At the start of the school year both classes were motivated, asking higher-level thinking questions, and working hard on their assignments. Once they realized that the couple of students that disrupted class on a daily basis didn't get any consequences [from administration after I wrote them up], they stopped caring as much and started mimicking the behavior of these students. This had a greater effect in my inclusion class because I

had more emotional support students in there.

Eli and Pat had similar experiences teaching both types of classes the general-education curriculum. Looking at the amount of content that both teachers were able to get through, it became apparent that they were struggling in the inclusion classroom. Eli said that the struggle over amount of content lay in behavioral challenges, similar to Pat's issues, and in thoroughly teaching challenging topics. Eli said that in the inclusion class more time was spent on managing behaviors of the students, while in the non-inclusion class, he spent more time teaching topics in depth. Pat offered similar reasons for struggling with completing the amount of curriculum required. Pat also dealt with larger amounts of behavioral problems in the inclusion class than in the non-inclusion classroom. The academic and behavioral levels of the students in the inclusion class were "all different," leading Pat to have to work at a much different pace to present and develop each course objective in the curriculum.

Level of information being taught:

Throughout the course of the study, both Eli and Pat said that they got through the entire required curriculum each year. They did emphasize how it was getting harder to do with the increase in inclusion students in their general-education classes. Eli said that more inclusion students means "I cannot analyze and improve my lessons year to year as I would like" because of all the added demands placed on maintaining the students' needs. Pat agreed with Eli, saying that "it does get more difficult each year to get through the curriculum."

The struggle becomes managing the general-education demands of teaching a set curriculum to students while managing time taken away from classroom teaching for state- and district-wide mandated testing. Now general-education teachers are being asked to manage the demands of students with IEPs, making sure that they accommodate each student's individual

needs which puts a greater strain on their ability to teach the curriculum (Connor & Ferri, 2007; Leyser & Tappendorf, 2001; Pawlowicz, 2001; Ravitch, 2002). The teachers in the study said that they feel each student should learn the general-education curriculum, but that it is hard to move through it while meeting the needs of all students assigned to their courses (Daam, Beirne-Smith, & Latham, 2001).

To assess if there was a difference in the curricular content taught in the inclusion and non-inclusion classes, an end-of-year questionnaire was given to both teachers. The teachers were given back their course objectives and asked to determine what level of information their students in each class were leaving the year knowing (Appendix I). Each objective was presented, and the teachers had to decide on a Likert Scale where the class as a whole was in their understanding of the objectives. Below are the responses from both Eli and Pat's questionnaire focused on their non-inclusion and their inclusion classes.

Eli's Classes

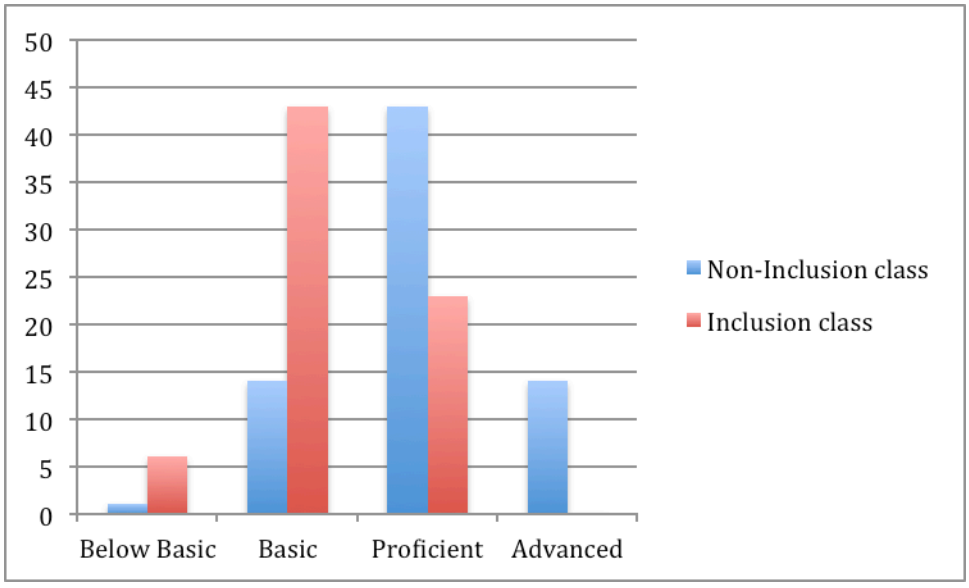


Figure 1. Comparison of student understanding of course objectives in Eli's classes.

The figure above is a comparison of the understanding level of the course objectives in

Eli's inclusion and non-inclusion classes. The first bar for each group is the results for the non-inclusion class and the second bar is the results for the inclusion class.

When comparing Eli's inclusion and non-inclusion classes, there were 33 objectives for the Earth Science course where the different classes performed at different academic levels. The differences were found in the student's level of understanding and depth of knowledge where the inclusion class demonstrated basic levels and the non-inclusion class demonstrated proficient levels. Eli expressed that in his non-inclusion class, the students were proficient on an objective in the curriculum, while the inclusion classroom had reached the level of basic functioning. The reason to focus on this difference is because for standardized testing students must be "proficient" to pass the section. A student that is at the basic level is not considered ready to move to the next level and does not receive credit on that section of the test.

The 33 objectives that are different raise the question of whether the curriculum taught in the two class types was different due to the amount of information that each class received. Eli said that as the year went on there was no questioning his teaching ability but it became clear "that we may not get to everything that's in the curriculum." As stated previously, Eli felt that the level of information that could be covered was different for each class. This difference led to the general-education curriculum to be impacted

Pat's Classes

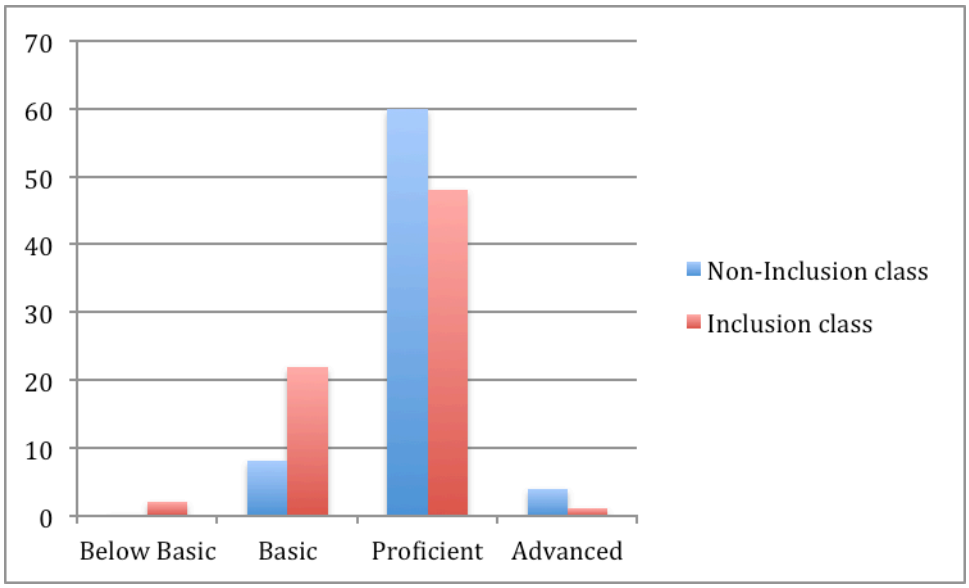


Figure 2. Comparison of student understanding level of course objectives in Pat's classes.

The figure above is a comparison of the understanding level for the course objectives in Pat's inclusion and non-inclusion classes. The first bar for each group is the results for the non-inclusion class and the second bar is the results for the inclusion class.

Pat expressed differences in 14 different objectives between the non-inclusion and inclusion classes. This information showed that 14 different objectives had the non-inclusion class as "proficient," while the inclusion class demonstrated a "basic" level of understanding of the objective. Although Pat did not have the same number of objectives with this pattern as Eli, both teachers demonstrated that there was a difference in the level of information being taught in the different class types. The change in the level of information that was disseminated in each class type shows that there could have been an impact on the general-education curriculum.

A reviewing of the two teachers' objectives questionnaire found similarities in some of the objectives that both the teachers' inclusion classes struggled to reach proficiency in during the

year. The table below shows the units and objectives for both teachers' inclusion classes where they were able to get to a basic level of understanding when compared to the non-inclusion class reaching proficient levels.

Table 2

Units and Objectives Table

Course unit	Objective
Unit 2	The students can describe the composition, properties, and scale of the earth.
	The students can explain the reasons for the seasons, as well as day and night.
Unit 5	The students can analyze simulated earthquake data and calculate magnitude and epicenter location of earthquake.
	The students can analyze seismograph from an actual earthquake and collect scientific information such as magnitude and distance of the seismograph station to the earthquake's epicenter.
	The students can illustrate Earth's interior, including convection currents and limits of primary and secondary seismic wave dispersion through the planet, detailing the solid and liquid layers.

Note. This shows the teacher overlap in students' understanding level of basic in the inclusion class when compared to proficient in the non-inclusion class. So for the objective stated the inclusion class reached a basic level where the non-inclusion class reached a proficient level on the same objective.

To truly understand why there were so many differences in the level of understanding for the different classes, an analysis of the types of objectives that were different was undertaken. The first unit that the students learned was "The Nature of Science," where the focus was on

preparing the students to move through the course. It focused on a review of topics that had been presented in the past, such as independent and dependent variables, first introduced in math courses at the lower grades. The unit also covered basics in scientific inquiry such as standard measurements and the steps to solve scientific problems. The second unit covered was "The Earth and its Systems," which focused on space, the solar system, and Earth, which are all topics that had been introduced in lower grades and elaborated on at the junior-high-school level. This made the first part of the year a review for all students because the units were previously presented material.

As the year progressed harder units were presented, focusing on meteorology, astronomy and geology. Even though students had been exposed to elements of these units in earlier science courses, the new information was more complex and required higher-order thinking to understand the content. This challenging new material could have been a limiting factor for the students if they were unable to grasp the basic information due to retention issues, behavioral challenges limiting focus, and/or the student's inability to comprehend the content on a deeper level.

There were many differences in Eli and Pat's course-objective questionnaires. Eli expressed more differences in his non-inclusion class reaching proficient levels on objectives than the inclusion classroom, with a total of 33 differences. Pat did not express similar levels of differences in the different class types obtaining a proficient level on objectives, with a total of only 14 differences. Because the questionnaires were in self- report format, there is room for interpretation on what level of understanding the students truly reached. To find reasons why there was such a large discrepancy in understanding, the teachers were asked what evidence they used to determine understanding levels on course objectives that they had chosen. Both gauged

their students' understanding level through class activities and tests. Day-to-day progress and tests helped to determine the students' level of understanding, but it did not factor in limitations for students such as test anxiety or whether the teachers' approach to teaching the objective did not correlate with the students' learning modality.

Another factor that played into teacher assessment of the actual level of understanding their students reached in the course objectives appeared in the teachers' ability to be able to connect with the students. Eli was seamless in the area of classroom management. The students recognized the subtle warning techniques used to make them aware that their behaviors were not acceptable. Pat struggled with classroom management, yelling at students to pay attention and even ignoring certain behaviors such as sliding around the room in chairs when they were supposed to be on task. Eli's students appeared to accept what was going on in the room and respect Eli, whereas Pat's classes did not demonstrate any level of respect, with constant disruptions and repeated directions required for them to perform basic tasks. This disconnect with the students would skew the teacher's view of the information the students were absorbing and the level at which they were understanding the content. Eli's course objective questionnaire demonstrated struggles between the understanding levels of the inclusion and non-inclusion classrooms. Pat's course objective questionnaire displayed some disconnect regarding the level at which students were actually understanding the material being presented. Through observations and focus groups, Pat said a limited amount of teaching could be done in the inclusion class due to behavioral issues. However, upon completion of the course objective questionnaire, Pat saw very few differences in understanding levels between the two classes. Although Pat's differences in student objective levels were different from Eli's, the difference noted does indicate that the general-education curriculum was being impacted in the inclusion

classroom.

In summary, Eli and Pat did believe that they were capable and ready to teach both the inclusion and non-inclusion classrooms at the start of the year. As the year progressed, they began to struggle with behaviors in their inclusion classroom that limited their ability to teach the general-education curriculum. The students' varied levels and struggle to understand the basic information made it difficult for both teachers to really go into depth in the course content, limiting the information they could present and teach.

Another area that appeared to be lacking in the data was the students' preparedness to be included in a general-education course. Both teachers explained that they had to regularly return to the basics in their inclusion classrooms due to the students not understanding the concepts. This could be owing to previous lack of exposure to curricular content or that they were just not academically ready to take on the pace and requirements of the general-education curriculum.

Summary

This study sought to explore whether inclusion has any impact on the general-education curriculum. Due to the competitive nature of educational requirements and curricular demands, Common Core, state testing, and how academic levels are created, the junior-high school was a good environment to focus on the curriculum. The research questions that framed this study were explored through qualitative case-study analysis. The methodology included of several data sources

1. Initial questionnaires administered to both teachers involved in the study.
2. Motivational survey administered to all the students in the observed classes by both teachers

3. Observations of the inclusion and non-inclusion classes taught by each teacher during the school year
4. Use of Danielson's Teacher Evaluation Tool, Domain 3: Instruction
5. Focus groups conducted with participating teachers
6. Collected teacher artifacts (lesson plans, handouts, tests/quizzes, lab write-ups)
7. Course objectives final student learning level

The data collected from the artifacts, questionnaires, observations and focus groups was analyzed to identify themes that presented themselves in several different data sources. The results of the data analysis used to answer the research questions were presented in this chapter.

The focus groups, observations and collected artifacts did indicate that inclusion could be impacting the general-education curriculum that was being taught. There was a noticeable difference in level of understanding between each teacher's inclusion and non-inclusion classes, calling into question how much of the curriculum is actually understood by the different classes. Both teachers also emphasized how they had to focus on the basics in their inclusion classrooms throughout the year, not being able to go into depth with the curricular content as they could with the non-inclusion classes. This also indicates that an inclusion classroom differs in the quantity and complexity of the general-education curriculum compared with a non-inclusion classroom. Chapter V provides a discussion of the findings, implications for impact on the general-education curriculum, and topics for further research.

Chapter 5

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

Introduction

Since the 1970s, the education profession has been working to create an equitable academic environment for all students. Legislation has given students with special needs greater access to the general-education curriculum. Inclusion has become the norm in school districts, placing students with Individualized Education Plans (IEPs) in general-education classes with their non-disabled peers. The impetus behind the integration of students with special needs is to give all students an appropriate public school education.

Summary

The purpose of this study was to investigate whether inclusion was impacting the general-education curriculum that is being taught in a secondary science classroom. This study examined whether there was a difference between an inclusion and a non-inclusion science class focusing on the general-education curriculum. The following aspects of the curriculum were analyzed to see whether inclusion was changing the content being taught in the classes: content knowledge obtained by students, curricular pace, depth of curricular content taught, and how many of the required course objectives each class attained.

The data was collected through qualitative measures including discussion groups, classroom observations, artifact collection, and questionnaires. Two teachers, each teaching two classes, were studied. Each was considered a case study because of the complex data collection process of artifact collection, observations, and discussion groups over the course of a school year. The two teachers involved in the study taught the same Earth Science curriculum in their district's junior high school. Each teacher taught an inclusion classroom and a non-inclusion

classroom. The difference between each teacher's classes was the percent of students with IEPs enrolled in each. The inclusion classes were classified as having at least 20% of the students with an IEP. The non-inclusion classes had fewer than 20% of the students with IEPs. Although these classes were classified as non-inclusion for the study, they did have a small percent of IEP students because no classroom has a truly homogeneous population of students in our current educational environment.

The participating teachers completed a survey at the start of the school year to assess their job satisfaction and training to work with students with special academic needs. The students in the selected Earth Science classes were given a motivational survey to identify each class's motivation levels as a whole. This allowed the researcher to assess for differences at the end of the study regarding progress through the curriculum. All the classes demonstrated similar levels of motivation, so was not a limitation in the study.

Over the course of the year, the teachers took part in discussion groups to assess their views of special education, inclusion, and how they felt tat they were conveying the curriculum to their students. The teachers were also observed three times to provide better insight into the content being taught, pace of curriculum, and the academic level of the content. At the end of the school year, the teachers were given back their course objectives and asked to rate the level of student understanding on each objective that each Earth Science section covered during the year.

The four research questions examined in the study were:

5. Is there a difference in the assessments, formal and informal, used in an inclusion and a non-inclusion classroom?
6. Does the pace or speed that the teacher is going regarding dissemination of information differ for content in an inclusion and a non-inclusion class?

a. Are the inclusion and non-inclusion classes at the same point in the curriculum?

b. Are the inclusion and non-inclusion classes getting the same allotment of time to practice concepts that are taught?

7. Does the teacher's attitude towards inclusion, as measured by the survey questions and measured by interview questions, change his or her approach to teaching the course curriculum in an inclusion and a non-inclusion classroom?
8. Are there differences in the instructional strategies implemented in inclusion and non-inclusion classrooms by the teacher?

Teacher Researcher Development

At the start of the study, the teachers were friendly but hesitant to fully commit to the study. They were unsure about the expectations that they had to meet to move forward through the school year. However, as time went on, through email, observations and collection of artifacts, the teachers developed a comfort level with the researcher allowing more candid conversations to occur. Even with a positive rapport between the researcher and participants, there was still a clear distance between them when the teachers were asked to discuss their beliefs about inclusion. The teachers appeared to be a struggle with honest about their feelings regarding inclusion. At times, they hesitated to answer questions. They would also stop midsentence and rephrase what they were saying about special education. It was as if there was an invisible line that they felt they could not cross regarding special education.

One reason for hesitation could be the unspoken belief that people cannot be critical of special education. It is as if when a person says something negative about special education he or she is also being negative about the individuals living with a disability. Even though the researcher worked with the teachers on an intensive level collecting all materials given out in

their classes, having discussions, and completing observations, they did not share their true feelings about inclusive classrooms. The teachers tried to put a positive spin on things occurring with the special education students in their classrooms, but their tension and frustration were evident. This was demonstrated in a comment made during a discussion, when Pat said,

> The inclusion students can benefit from having general-education students as models of behavior and also benefit from the class discussions with general-education students. The drawbacks are that both groups are held back in a way.

Pat began by saying that inclusion was beneficial, but concluded that it was also holding back all the students in the class. Although she appeared negatively, Pat continued that even though the special-education students held the others back, it was all right and that she was fine working with all the students in the class.

Another reason there was some strain on the relationship between the teachers and the researcher may have been a concern that the study would reflect poorly on their professional interactions. These concerns may have led to them be selective in the information they provided. As stated earlier, the invisible line that exists in honest discussions about special education may limit the information that can be gathered in research focused on analyzing what is truly occurring with inclusion.

Types of Teachers

Though there were only two participants in the study, a thorough investigation was completed. The study focused not on one aspect of the teachers' courses, as previous studies have (Almog, 2008; Conderman & Johnston-Rodriguiz, 2009; Conderman, Morin, & Stephens, 2009; Vail & Scott, 1995; Walker, 2012), it focused on all aspects that were related to the general-education curriculum being taught. Having only two teachers in the study allowed for a

substantial data collection and analysis of all the artifacts used in the classes. The observations were intimate due to the focused relationship that was formed during the study, and the discussion sessions had a level of trust a larger study would have not been able to obtain. Even with the teachers still appearing to monitor their word choices a level of trust was formed to create more open communication then a larger study might have allowed.

As the study progressed, the teachers revealed themselves as different two types. One demonstrated a strong boundary with the students. He was a authoritative yet kind, setting clear limit on what was acceptable behavior in the classroom. The students respected the teacher, and even though they enjoyed playful banter at times, the students never crossed the boundary set by the teacher. The second teacher did not have clear boundaries for the students, appearing to treat the students as friends rather than maintaining the teacher/student separation. The teacher took up large qualities of time addressing social issues of the students such as friendships and relationships rather than working on the curricular content. The students struggled to understand why they were getting consequences during class when the teacher held them accountable for something that previously went undisciplined.

The difference in teacher types also impacted how they were rated used Danielson's Teacher Evaluation tool, Domain three (Appendix H). One of the teachers was consistently rated proficient and distinguished for instruction using the Danialson Evaluation during all three observations. The other fell mainly into the basic or unsatisfactory category. A teacher who sets clear boundaries from the start of the class informs the students of the course expectations. A teacher who does not set clear boundaries causes confusion in the students.

The different teacher types impacted the ability of the students to absorb curricular content. The teacher with clear boundaries was able to move through the curricular content with

few breaks for discipline, so the students kept progressing. The teacher with unclear boundaries had to constantly stop to correct student behaviors, reducing their ability to move through the curriculum. This not only impacted the special-education students but also the general-education students enrolled in that teacher's inclusive class.

Discussion of Findings

This study focused on how inclusion impacted the general-education curriculum, addressing the four research questions. The artifacts, discussion groups, questionnaires, and observational data over the course of the 2014-2015 school year resulted in the following findings.

1. Is there a difference in the assessment, formal and informal,, in an inclusion and non-inclusion classroom?

The study arrived at several findings. First, both teachers shared through their artifacts and discussion sessions that the number of choices given on modified tests/quizzes were reduced. One example was an IEP student being given three answer choices instead of four on multiple-choice questions (Appendix K). This modification to the standard tests and quizzes was made because special-education students' IEPs said that the number of multiple-choice options should be reduced. The reduction in choices is believed to give the IEP students a better chance of selecting the correct answer. However, this leads one to wonder eliminating a choice limits the problem-solving skills needed to select the correct answer.

One of the teachers was required to use the technique of "chunking" by creating a group of six questions with only six fill-in-the-blank word choices (Appendix K). Although the student was required to complete the same number of questions in this section, the chunked questions were grouped so that all the words fit into a category. For instance, if the test focused on

volcanoes, one chunked section would only be words that pertained to the parts of the volcano. The next chunked section would include only words that pertained to types of explosions. This was different from the non-inclusion tests and quizzes in which the general-education students had one large word bank for the entire fill-in-the-blank section. The non-inclusion class's word bank was not categorized or separated into groups in any way. Dividing the vocabulary words from a large grouping to smaller, categorized groupings removes the students' need to problem solve. It also decreases the students' need to use higher-order thinking to identify the correct answer, as their classmates must. This modification could modify the general-education curriculum by not making connections with earlier material, limiting the students' knowledge base for later courses.

The final difference between the assessments in inclusion and non-inclusion classes was the way questions were stated. On several tests, the questions for the two types of classes were formatted differently. The vocabulary on the tests given to students with IEPs was sometimes or included hints to the correct answers. Several tests and quizzes had one or two questions that were not on those for inclusion students (Appendix K). The teachers offering hints or removing questions changed the curricular content that the IEP students were expected to know. This assistance changed the curriculum and could be considered a slight modification to the general-education curriculum.

These differences are supported by research findings that changes to information assessed could be modifying the general-education curriculum (Pawlowicz, 2001; Pugach & Warger, 2001). Modifications of tests reduces what is expected of students in the inclusion classroom because at times the teacher uses only a modified test for all the students in the class, not just the IEP students. This, in turn, limits the curricular knowledge that is expected from all the students,

and the "general-education student will not be challenged to her full aptitude" (Antoinette, 2002, p.2050). Inclusion was a governmental initiative to provide appropriate education for all students, but it may be impacting the academic development of all students (Graham & Slee, 2008; Martin, 1995).

One major concern was that the accommodations and modifications in the inclusion classroom, such as chunking, hints, elimination of questions on tests, and only being taught basic information, the students should have been progressing at a pace similar to those in the non-inclusion class, but they were not. Third marking period reports from the teachers indicated that even with all the modifications and accommodations the inclusion classes were struggling to earn similar and/or higher grades than the non-inclusion classes. Eli said, "There always tends to be a drop off in grades MP3, but in general, Period 2 [inclusion class] grades are consistently slightly lower than Period 5 [non-inclusion]." Pat had similar concerns: "The grades for each marking period have been lower for my 3rd period [inclusive] class ." How was it possible that the inclusion class students were not progressing or improving their grades if they were focused on the basic information, getting large amounts of repetition, and receiving modified tests? Inclusion did not seem to be meeting the needs of all the students enrolled in the inclusive sections. A reason may have been that the students experienced learned helplessness. They did not feel they would be able to complete the tasks asked of them without hints or assistance, leading to them not trying to learn the material thoroughly. Black and Williams (1998) found in a review of the literature that formative assessments were limiting students' knowledge because of minimal feedback from the teachers. This lack of feedback could lead students into a false state of confidence or reliance on the accommodations to do well. This in turn decreases their confidence in their abilities and decreases their motivation to learn.

2. Does the pace or speed that the teacher is going regarding dissemination of information differ for content in inclusion and non-inclusion classes?

To answer this research question a large amount of data was pulled from classroom observations and teacher discussion groups. At the start of the year, both teachers involved in the study believed that they would be covering the entire Earth Science curriculum. They felt that they would be able to teach all the objectives to the students and keep the pace similar in each class type.

As the school year progressed, both teachers spoke of how challenging it was to keep both the inclusion and non-inclusion classes at the same point in the curriculum. Eli said, "I get through all the information every year, but sometimes can't cover the material as in depth as I would like to." Pat said that in her inclusion class "even the basic information they have trouble with," requiring her to keep re-teaching concepts and limiting her ability to move forward in the curriculum. These statements indicated that inclusion was altering or influencing the general-education curriculum.

The teachers said throughout the study that IEP students struggled to develop an understanding of basic concepts and that there were many behavioral issues to contend with throughout the year in the inclusion classes. Eli said, "I want them to grasp the basics before moving onto more difficult content" and emphasized that he struggled with moving on in the curriculum because of "spending so much time re-teaching materials that we have already covered." Eli also said that behavioral issues caused delays in teaching of content due to disruptions.

Pat said that she had similar struggles with behaviors in her inclusion class: "In this class, many students lose focus very quickly and needed to be redirected." These two factors changed

how the teachers perceived the amount of information they could teach the classes. It appeared that the teachers felt rushed teaching the curriculum in the inclusion classes and were frustrated by the behavioral demands of the students. Leadley (2004) supported what the teachers were saying, finding that the inclusion of students with disabilities in general-education classes limits the progress of all the students. Including students with emotional disabilities "interferes with the education of the well-behaved, attentive students" (Leadley' 2004, p.2-3). This supports what both the teachers in the study kept saying about not getting through the curriculum due to numerous classroom disruptions by the students in the inclusive classrooms.

In all the non-inclusion classes the teaching pace moved steadily and the teachers could go into depth. The groups as a whole learned the material quickly and were able to make connections between new material and previously taught content. At the same time, the teachers said that they were working to keep both classes at the same point in the curriculum, but to accomplish this they were unable include more depth in the inclusion classes. The inclusion classes required so much repetition that only the basic concepts could be taught (Kozik et al., 2009; Watkins et al., 2008).

Both teachers said that they were ultimately able to keep the pace similar in the inclusion and non-inclusion classes, but that they were not teaching at the same depth. In the non-inclusion classes, the students went deep into course content and demonstrated high-order thinking skills. The teachers admitted that they taught inclusion classes only the basic concepts due to their limited understanding of the curricular content and their need for large amounts of re-teaching and redirection.

3. Does the teacher's attitude towards inclusion, as measured by the survey questions and measured by interview questions, change the approach to teaching the course curriculum

in an inclusion and a non-inclusion classroom?

At the start of the study, the teachers emphasized that they had taken courses during their undergraduate programs that assisted them to teach students with disabilities. Both teachers said that they felt comfortable working with this population. Research indicates that teachers who have taken an introductory special-education course feel comfortable teaching inclusive students due to (Bowlin, 2012; Forlin & Chambers, 2011; Orr, 2009). However, over the years, students in inclusion classes now include those with behavioral disabilities as well as those with learning disabilities. Pat and Eli spoke of how the disruptions by students took away from the limited time they had to get through the Earth Science curriculum. Both teachers also described the constant need to explain the information to students who were struggling and to maintain class discipline was disrupting the education for all the students. Leadley (2004) expressed similar concerns, stating that the placement of emotional support students in an inclusion classroom was disrupting the education of general-education students. The two teachers involved in the study had similar views on how the emotional support students were disrupting their ability to teach. This severely limited their interactions with the general-education students, supporting past research on inclusion (Antoinette, 2002).

On a pre-study survey assessing job satisfaction, both teachers said that they were "very satisfied" with their professional choice (Appendix A). As the year progressed, the teachers said that they were struggling to keep up with all the IEP accommodations. The preparation period that the teachers received was not sufficient to alter lesson plans and activities to meet every student's needs. This reduced their ability to teach the academic content to the level they felt appropriate (Connor & Ferri, 2007; Forlin & Chambers, 2011; Leyser & Tappendorf, 2001; Pawlowicz, 2001; Ravitch, 2002;). Pat said, "It is difficult to plan activities that will be at a level

appropriate for all students." The teachers demonstrated their frustration in several discussion groups, emphasizing how they "feel that [they] have to move at a much slower pace" in the inclusion classes and that the students were having a hard time retaining the information previously taught.

The frustration did not stop at the teachers' inability to go into depth in all their classes or with the limited time they had to prepare. Another source of frustration was their feeling that they were unable to meet the needs of all their students. A large amount of time was spent with the inclusion students re-teaching concepts and/or trying to maintain behaviors. These administrative tasks led the teachers to feel that they were neglecting the general-education students who were enrolled in the inclusion classes. Eli emphasized this frustration when he said,

> In the inclusion class I probably spent more time managing behavior. In the non-inclusion class, I had spent more time teaching each concept because it was more challenging overall for the entire class to learn,…whereas in my Period 5 [inclusion], much teaching time was wasted due to a misbehaving IEP student, and the non-IEP students lost that learning time.

The teachers felt that the general-education students could have moved faster in the curriculum and gone into more depth. The teachers began questioning their self-efficacy at points in discussion sessions. Research has found that a teachers' confidence to teach is positively related to how they feel they instruct their students (Ruma-Viel, Houchins, Jolivette & Benson, 2010).

As Bandura said in his research on Social Learning Theory, a teacher's influence on the students is impacted by his or her personal belief about how he or she is teaching the curricular content (1997). Both teachers said that they were still satisfied with teaching, but the struggle to remain positive about their ability to teach inclusion students wavered from time to time

throughout the year, making them question their teaching abilities. Avramidis, Bayliss, and Burden's (2000) research supports what was found in this study: that teachers are frustrated with the demands placed on them and with handling the behavioral issues, so that that they felt they could not teach all the students they were assigned. The study was conducted 15 years ago, yet we are still having teachers express the same frustrations about teaching inclusion classrooms. If teachers are questioning their ability to teach students assigned to their courses, does this not impact the curricular content they are presenting? Teachers must be the focal point in classes to keep students moving forward. If they are not sure of themselves, it may impact the general-education curriculum they are teaching.

4. Are there differences in the instructional strategies implemented by the teacher in inclusion and non-inclusion classrooms?

Through the data collection process it became clear that the different classes were being taught the same curricular content, but on very different levels. In the non-inclusion classes, Eli used more complex graphs and images to present material (evidenced in the weather unit focused on jet streams) compared to those in the inclusion classroom. In his non-inclusion class, the students were shown a complex weather image and asked to determine the weather system that would be moving through while explaining how the weather would change. In his inclusion class, Eli had the students create a cold front and warm front together step by step and then asked the students what weather system would come next. Eli said that the reason for the simplified images and graphs was to keep the students moving at the same pace as his non-inclusion class, but the modified questioning was designed to increase student understanding in the inclusion class. This bothered Eli because he felt that he was not teaching all the students at their appropriate level, especially the general-education students in the inclusion section.

Pat demonstrated differences in the way she taught the materials to her classes. She said that the reason she walked the students through the questions and did not give them long wait times to produce answers was their lack of participation. Pat said that the students in the inclusion class refused to participate most of the time, so by asking a question and then moving on if the answer was incorrect she kept the class progressing. Though Pat used the same line of questioning in each class, the non-inclusion class received extra time for discussion. She allowed students to detail their answers or Pat herself added details to the answers. Pat said that in her inclusion class she had to "ask specific questions about the topic and prompt/guide them to the answers" to keep the class moving forward. This guided line of questioning limited the students' need to process the curricular content presented and could be considered a modification to the curriculum. The limitation could be that the students never truly developed an understanding of the curricular content because they were only regurgitating the information given to them without making connections to other academic content.

Both teachers used similar reasoning for adopting different instructional strategies in their inclusion and non-inclusion classes. The students in the inclusion classroom were unable to more deeply into the curricular content because they struggled to understand the basic concepts. The students required constant repetition in the inclusion classroom, limiting the teacher's abilities to do labs or activities because the students could not utilize higher-order thinking to process how the information given connected. In the non-inclusion classrooms, the students answered more challenging questions but did limited labs and activities because of time constraints. The limited labs and activities were not due to student's inability to process the information, but the limited classroom time as a result of mandated state testing and limited prep time for the teachers. The difficulties raised by the demands being placed on teachers like Eli and Pat has been discussed

repeatedly in research. Monitoring all the IEP students' needs takes away from a teacher's ability to utilize prep time to create educational and challenging activities for their classes (Almog, 2008; Daam, Beirne-Smith, & Latham, 2001; King-Spear, 2008; Leyser & Tappendorf, 2001).

The difference in teaching strategies in the two different class types demonstrates that inclusion is impacting the general-education curriculum. Students are receiving different levels of content instruction depending on the class they have been assigned to. The limited depth of content presented in an inclusion class creates an academic gap between students, which continues to grow in inclusion classrooms as students progress in their schooling. This not only impacts the special-education students who cannot understand the basic content but also the general-education students who are not exposed to more complex concepts. The limited complexity of what the students were exposed to in the inclusion classroom could also be reducing the students' abilities to develop higher-order thinking abilities. It promotes a form of learned helplessness due to the students not having to challenge themselves by developing problem-solving and critical-thinking skills.

Questions Arising from the Research

During the study, many additional questions about inclusion and the general-education curriculum arose, such as how the special education students were selected to be in inclusion classes. The researcher assumed that the students were placed in the teachers' classes through random assignment unless it came from a request from a parent or a previous teacher. This led to further questions. Did the students have to demonstrate readiness to be in a general-education class? If the student with an IEP demonstrated readiness, what were the standards the students had to meet before being placed in general-education classes? Were the special-education

students academically ready to enter general-education classes? The findings of this study indicate that they were not intellectually or behaviorally ready for the rigor of general-education curriculum classes. This was indicated by the teachers discussing the constant disruptions to their teaching requiring them to redirect students back on task or by having to use repetition constantly to just get the students to understand the basic concepts. So how does a district determine whether a special-education student is ready and capable to be a positive addition to a general-education class and move forward academically with the other students?

A second question that presented itself came from the teachers' frustrations in classroom management. One teacher had seamless classroom management skills that did not disrupt the flow of either type of class. But the other teacher struggled to maintain control of her classes, with students acting inappropriately throughout the class period limiting the content that could be taught. At no point during the study did the researcher find any behavioral plans that explained to the teachers on how to handle behavioral situations. In no discussion group did a teacher mention that a student had a clear behavioral plan to implement or that there was a plan to move a student out of the class if the student was not academically or behaviorally ready for it. One of the teachers was frustrated in maintaining control of her students, feeling that the administration was not holding the students accountable for their disruptive behaviors. This is supported by research that identified the administration needs to be active in the inclusive process for it to succeed (Obiakor, Harris, Mutua, Rotatori & Algozzine, 2012). One teacher said that once the other students realized that a student could act out in class with no consequences, the other students misbehaved. This leads to the question of why there was no a clear plan in place for the teachers who worked with students who had IEPs that told them what to do, who to contact, and when general-education is not the appropriate placement for the student. In secondary education, a

student without an IEP can be moved into a different class based on academic performance, but if a student with an IEP is acting up, it appears to be the teacher's responsibility to keep that student in the course with limited support from school administrators. Letting a student continue to act up, whether from academic frustration or behavioral issues, without proper guidance to learn how to handle their frustration these students may not be prepared for life outside school. Also, the teacher having to take time away from teaching may change the curriculum for all of the students in the inclusion classes. This needs to be addressed to determine whether the needs of all students are being addressed.

Third, why are teachers not getting extra preparation time or assistance from a trained special-education teacher if they have been assigned inclusion classes? Berry (2010) said that for inclusion to be successful teachers needed to believe that inclusion is beneficial and essential for the students. However, how can a teacher who has only taken a handful of courses in special education feel comfortable teaching an inclusive classroom without support? Researchers such as Forlin and Chambers (2011) and Scruggs and Mastropieri (2013) discussed how teachers were not prepared for the realities of inclusion. Teachers need more training, guidance, and assistance from trained professionals to assist them in determining how to meet the needs of all their students.

Because special education is an ever-changing minefield of accommodations and modifications, it is not only the teachers' responsibility to stay current. Administrators in the building need to know what is occurring in special education to assist in supporting and guiding teachers with inclusion. Administrators can no longer rely on the guidance and information given to them by their Directors of Special Education without having their own knowledge of what is occurring and how it impacts their buildings and staff. Support needs to come from all levels,

and administrators need to be active participants in inclusion to make it work.

Inclusion as a Whole

This study identified that there is a gap in the research focused on inclusion and the curriculum as evidenced by the pace and depth of knowledge that students received within the inclusion and non-inclusion class being different. This is a foundational study to make others aware that we need to conduct more research on inclusion and the curriculum that is taught without focusing on the social-emotional development of students or the singular gains of a program has within an inclusion class. Stating this there are still positive features of inclusion that need to be recognized. Inclusion does allow individuals with disabilities the opportunity to take part in general education to gain social development and exposure to general curricular content (Cameron and Cook, 2013).

Ball and Green (2014) conducted a study investigating school leaders attitudes towards inclusion of students within the general education curriculum. The study was correlational in design and identified that education leaders felt that certain disabilities should take part in inclusion most of the day but others disabilities, emotional and intellectual disabilities, should take part in limited inclusion (Ball and Green, 2014). This supports what Eli and Pat shared throughout the course of this study emphasizing that they believed in inclusion, but that certain disability categories might not be the most appropriate to take part in inclusive settings.

Recommendations for Future Research

As the number of special education students in general-education classes grows, it has become even more imperative that school districts have a plan that assesses whether they are academically ready to meet curricular demands of the general-education curriculum. A student with special needs should not be placed in such classes if there is no evidence that demonstrates

that the student will be able to keep pace with the curricular demands. Students should demonstrate the ability to retain the information taught, to connect curricular content, to and manage their behaviors appropriately so as not to distract attention.

Because special education continues to be a driving force among policy makers, legislators, and the legal system the topic of this study is difficult to research. Klingner and Boardman (2011) said that the field of special education needs to accept a mixed-methods approach to research instead of relying on quantitative studies. To get to the bottom of what is really occurring in classrooms, how those involved with special education are really feeling or experiencing, and what is truly leading to gap in skills taught in training courses, it is time to begin examining what is occurring in special education from all aspects, statistical and personal, to improve the services currently being delivered in schools.

The questions that arose during this study suggest the following areas for future research:

- Examine what disabilities are best treated by inclusion. The literature review, interviews, and observations demonstrate that not all student disabilities may be appropriate for inclusive classrooms. Students with emotional disabilities who are unable to handle themselves in an appropriate manner may not be ready for the general-education curriculum. A student with a learning disability who does not have the ability to process and/or retain the information taught during the week may not be a good candidate for an inclusion classroom. At this point, the inclusionary classroom is made up of several disability categories. However, there appears to be no clear understanding in which students needs can be met appropriately in a general-education classroom regarding curriculum pace and content. This needs to be examined further to identify whether there are students

with IEPs who would benefit from the academic rigor of the general-education curriculum and those for whom it is overwhelming and frustrating so that as a result they act out.

- Determine what inclusion should look like in a school district and find a model that has proved to be positive for the teachers and the students. Data needs to be collected from schools that have a successful track record of inclusion. This would include information on how they keep all the students; IEP and general-education, at the same place in the curriculum and have demonstrated that the students progress through their secondary program in an inclusive setting. The research needs to focus on what makes the inclusion program so successful, how the inclusive process is done, what standards need to be met by the students with special needs to be transitioned into the general-education courses, how progress is monitored for the students, and how the teachers who teach the inclusive classes are supported. This data would give all the schools that are struggling with inclusion a model to follow to create more successful inclusion programs.
- Find out whether students, both general-education students and students with IEPs, are receiving a "free and appropriate education." Is inclusion limiting the content knowledge for all the students enrolled in the inclusion classroom if that class is only receiving the basic curricular content and not getting into higher-order thinking material? Do the general-education students feel limited in their ability to acquire content information due to the teachers having to pay more attention to the students with IEPs because they are struggling to retain the information or cannot control their behaviors, requiring teacher attention? The

studies need to focus on things other than the social/emotional development of students or the benefits for the students with special needs. The studies need to examine how the general-education curriculum is being impacted from the student's, the parent's, and teacher's perspectives. Studies need to look at inclusion from all angles to find a way to make it effective for all involved, not just the special education students.

- Examine whether there is a difference in the general-education curriculum taught in an inclusive setting based on the gender of the teacher. Do students respond more to a male or female teacher? Does the gender of the teacher delivering the curriculum play a role in the retention of material or the behaviors of students in an inclusion classroom?
- This study has shown that inclusion may be impacting the general-education curriculum in the content area of science. Future studies could examine if the same results are found when conducting a mixed-methods study of other content areas. Does inclusion impact the general-education curriculum in mathematics, social studies, or English, for example? Another aspect of the study could examine whether inclusion impacts all grade levels. Does the general-education curriculum taught at the elementary level have similar findings that only basic information is being taught when compared to the middle or secondary levels?
- It would be beneficial if teachers adopted the Socratic Method to help disseminate the curriculum to all the students enrolled in their classes. The Socratic Method is an approach that allows those involved to collaborate and explore through the use of discussion and reflection. This might help each teacher to become a stronger,

more confident facilitator in the inclusive classroom. Douglas (2014) conducted a study on the Socratic Method in an undergraduate college course and found that it may have contributed to student understanding and depth of the content they were learning. If teachers worked together using the Socratic model, it might open a strong line of communication allowing the teachers to work through a variety of problems they face teaching an inclusion classroom. This would also enhance the teachers' ability to identify areas of strength and need in the content they are delivering by assisting each other in managing the behaviors and demands an inclusion classroom poses.

- More research is needed on examining how the personalities and abilities of the teachers being assigned to teach inclusion classrooms is also impacting the delivery of the general-education curriculum in an inclusion class. It is assumed that all teachers within a school building are capable of teaching all the students assigned to them. This assumption comes from the belief that teachers are trained professionals in a content area and can disseminate the content materials to any student. However, this is not case, especially with the large number of students identified as having special needs now included in general-education courses. Research needs to study what personality qualities and traits assist in working in an inclusion classroom. It also needs to focus on each teacher's ability to work with both general-education and special-education students in an inclusion classroom. It is not fair to assume teachers are qualified to teach all students assigned to them because they have the content knowledge.

- This study found that there was a belief that students would benefit from simplified visuals in an inclusive classroom. Research needs to examine whether visuals are as beneficial as other types of learning materials. The benefits of visuals have been researched, but more research could examine what type of visuals, how they visuals presented, and their complexity are effective in different class structures.
- One final area that requires study is the administrative decision-making for inclusion. As this study discussed, a computerized program normally does scheduling or the students are just placed in classes based on their availability. In inclusion, administrators need to take a more active role in placing students in classes that will build on their strengths and needs. This also requires the administrators to examine their teaching staffs to make sure that they are not overwhelming them by placing large numbers of inclusion students in their courses if there is a chance that teacher is not equipped to take on the challenges. Research needs to identify which administrative approaches are producing positive outcomes in inclusive classrooms and which are limiting the academic progress of students.

It is time that research examined the effectiveness of inclusion regarding the general-education curriculum as student's progress through their secondary courses. Courses at the secondary level build on pre-requisite courses. Research is needed to see whether inclusion is impacting, in any way, the academic progress of students. The current study demonstrates that inclusion limits the depth of knowledge that students receive due to their not being able to move past the basics. Does this limited knowledge impact students who move from an inclusive class

into another course because they are now competing with students who had the opportunity to delve deeper into earlier content? Will the students with IEPs who struggled to grasp the basics be scheduled with other general-education students for the following year, limiting their academic knowledge base?

Conclusion

As the number of students with IEPs included in general-education curriculum increases, the impact of inclusion on the curriculum needs to be examined. The idea that having a IEP students join general-education classes appears appropriate on paper. However, does the student with an IEP have the ability to keep pace with the class and retain the information necessary to move forward throughout the year? Is it fair to assume that the general-education curriculum will not be impacted if a teacher cannot get past the surface information of vocabulary and functions? If students are not given time to formulate concepts and make connections with the curricular content, does it not limit the value of the curriculum?

Although the study found common themes in inclusion, the differences are important to recognize. As the number of students with IEPs increases in general-education classes, districts need to provide training and refresher courses or programs for the teachers. This will promote a more positive outlook and comfort for the teachers when they work with inclusion classes and reduce their frustrations. The time has passed when only students with mild intellectual disabilities were considered for inclusion. Now any student with an IEP can be included in a general-education class no matter what their physical, mental, or behavioral limitations might be. Teachers are watching their classrooms explode with all different disabilities that they are not trained to teach or possess a comfort level with. The trainings would also create comradeship among staff, opening up lines of communication to assist with modifying lessons and labs.

The surveys and interviews revealed that there is an impact from inclusion on the general-education curriculum. They showed that students who were enrolled in the inclusion classes were only receiving the basics of the curriculum compared to those in the non-inclusion classmates. On the surface, it seemed that the basics were all they needed, but the reality is that students need to move deeply into the curricular content to acquire a real understanding of the concepts that are required to move on to courses at the next level. The inclusive students were all limited in the curricular knowledge they were obtaining in the classrooms possibly limiting their advancement in their academics. In future classes, the students from the inclusion class will be behind the rest of the students, having to struggle to catch up to the knowledge base of the other students.

Emerging from this study is evidence that inclusion is not merging well with the general-education curriculum. Throughout the study, the teachers shared their frustration at only being able to teach "basic" information to the students in the inclusion classroom. They felt that they were unable to fully cover the curriculum, putting limits on all the students in the inclusion classes. The general-education students were not getting enough attention from the teacher due to the constant demands to address the behavior of the students with IEPs or having to repeat previously taught material. The IEP students were not getting the full curriculum because they struggled to retain the previously taught information and required large amounts of repetition. How can we look at inclusion as a positive if it is negatively impacting the general education that all the students in the class should be receiving? Are we meeting the needs of any of the students in the class if we are making the special education students struggle and boring the general-education students? Can inclusion really work if a student reads at a fourth-grade level but is expected to focus on reading textbooks, worksheets, and labs, and comprehend what is being

taught? Research has demonstrated great gains in the social and emotional development of all types of students in an inclusive setting, but what about the curriculum being taught? Frustrating the special education students because they are not "ready" for the rigor of general education and limiting the academic growth of the general-education students because of limited curricular content is not benefiting any of them.

This study demonstrated that inclusion is impacting the general-education curriculum, raising concerns about different aspects of inclusion. First, teacher trainings need to be geared towards assisting teachers who are assigned inclusion classes the skills and confidence to teach the courses. This includes assistance from others in the building who are trained to teach special-education students and from administrative staff. Second, how are students with IEPs being assessed and prepared to enter the general-education classes? What lets the professionals know that a student is ready for the general-education curriculum? How has the student demonstrated that he or she can meet the expectations associated with being in general education from homework completion to content-knowledge retention? Third, how is inclusion supposed to occur? There are no guidelines on how to implement inclusion in a school district even though there is federal funding for inclusion. In school districts today, most of the scheduling is done through a computerized program or the student is placed in a class based on need. As this study indicates, that may not be the best way to place students in an inclusion classroom. Administrators need to take a more active role in using students' strengths and needs, along with teachers', to create a functional inclusion class that serves all involved. Finally, this research study indicated that inclusion is struggling to be successful for all students in the district studied. More research that examines what makes inclusion successful for all students involved in inclusion classes and ways to alleviate teacher frustration is needed. Students need to be ready

for the general-education curriculum and its expectations.

Ultimately, inclusion and its impact on curriculum need to be examined to find out whether it is really assisting general- and special-education students academically. As the research in this study and several others has indicated, inclusion does not appear to be as beneficial educationally as expected. As with most initiatives, inclusion looks good on paper as a concept, but its implementation appears to be failing all students, general and special education. If inclusion is going to work, it is time that the fear of examining what may really be occurring needs to be put to rest, and researchers need to be focusing on inclusion as a whole. The focus should be on the students, the parents, the teachers, and the administrators involved in inclusion. Is inclusion advancing students' knowledge and understanding or limiting their academic growth?

References

Almog, O. (2008). The relationship between teachers' instructional behavior and the ways pupils with special needs function in the inclusive classroom. *Insights on Learning Disabilities, 5*(1), 37-56.

Avramidis, E., Bayless, P., & Burden, R. (2000). A survey into mainstream teachers' attitudes towards the inclusion of children with special educational needs in the ordinary school in one local education authority. *Educational Psychology, 20*, 191-211. doi: 10.1080/713663717

Baker, J., & Zigmond, N. (1990, April). Mainstreaming learning disabled students: The impact on regular education students and teachers. Paper presented at the Annual meeting of the American Educational Research Association, Boston, Massachusetts.

Ball, K., & Green, R.L. (2014). An investigation of the attitudes of school leaders toward the inclusion of students with disabilities in the general education setting. *National Forum of Applied Educational Researcher Journal, 27*(1 -2), 2014.

Bandura, A. (1977). *Social Learning Theory*. New York, NY: General Learning Press.

Bandura, A. (1989). Human agency in social cognitive theory. *American Psychologist, 44*(9), 1175-1184.

Baily, J. P., & Williams-Black, T.H. (2008). Differentiated Instruction: Three teacher's perspectives. *College Reading Association Yearbook, 29*, 133-151.

Baughman, M. (2008). The influence of scientific research and evaluation on publishing educational curriculum. In T.Berry & R.M. Eddy (Eds.), *Consequences of No Child Left Behind for educational evaluation. New Directions for Evaluation, 117*, 85-94. doi: 10.1002/ev254

Bender, W. N., Bail, C. O., & Scott, K. (1995). Teachers' attitudes toward increased mainstreaming: implementing effective instruction for students with learning disabilities. *Journal of Learning Disabilities, 28*(2), 87-94. doi: 10.1177/002221949502800203

Berry, R.A.W. (2010). Preservice and early career teachers' attitudes towards inclusion, instructional accommodations, and fairness: Three Profiles. *The Teacher Educator, 45*(2), 75-95. doi: 10.1080/08878731003623677

Black, P., & Williams, D. (1998). Assessment and classroom learning. *Assessment in Education: Principles, Policy & Practice, 5*(1), 7-75. doi: 10.1080/0969595980050102

Bowlin, T. M. (2012). *Inclusion and Collaboration: Impact of Preservice Teachers' Experiences on Their Knowledge, Attitudes and Perceived Sense of Efficacy*. Unpublished doctoral dissertation, University of Tennessee, Knoxville.

Bulgren, J. A., Lenz, B. K., Marquis, J. G., Deshler, D. D., Schumaker, J. B., Davis, B., et al. (2006). The instructional context of inclusive secondary general education classes: Teachers' instructional roles and practices, curricular demands, and research-based practices and standards. *Learning Disabilities: A Contemporary Journal, 4*(1), 39-65.

Buell, M. J., Hallam, R., Gamel-McCormick, M, & Scheer, S. (1999). A survey of general and special education teachers' perceptions and inservice needs concerning inclusion. *International Journal of Disability, Development and Education, 46*(2), 143-156. doi: 10.1080/103491299100597

Cameron, D. L., & Cook, B. G. (2013). General education teachers' goals and expectations for their included students with mild and severe disabilities. *Education and Training in Autism and Development Disabilities, 48*(1), 18-30.

Cohen, M. (1978). Whatever happened to interdisciplinary education? *Educational Leadership,*

36(2), 122-126.

Conderman, G., & Johnston-Rodriquez, S. (2009). Beginning teachers' views of their collaborative roles. *Preventing School Failure, 53*(4), 235-244. doi: 10.3200/PADL.53.4.235-244

Conderman, G., Morin, J, & Stephens, J. T. (2005). Special education student teaching practices. *Preventing School Failure, 49*(3), 5-10. doi: 10.3200/PSFL.49.3.5-10

Connor, D. J., & Ferri, B. A. (2007). The conflict within: resistance to inclusion and other paradoxes in special education. *Disability & Society, 22*(1), 63-77. doi: 10.1080/7096875906056717

Cook, B. G., Cameron, D. L., & Tankersley, M. (2007). Inclusive teachers' attitudinal ratings of their students with disabilities. *The Journal of Special Education, 40*, 230-238. doi: 10.1177/00224669070400040401

Creswell, J. W. (2013). *Qualitative inquiry and research design: Choosing among five approaches* (3rd ed.). Thousand Oaks, CA: Sage

Creswell, J. W. (2007). *Qualitative inquiry and research design: Choosing among five approaches* (2nd ed.). Thousand Oaks, CA: Sage.

Daam, C. J., Beirne-Smith, M., & Latham, D. (2001). Administrators' and teachers' perceptions of the collaborative efforts of inclusion in the elementary grades. *Education, 121*(2), 331-338.

Danielson, C. (2012). Teacher Evaluation: What's Fair? What's Effective? Observing classroom practices. *Educational Leadership, 70*(3), 32-37.

Danielson, C. (2010/2011). Evaluations that help teachers learn. *The Effective Educator, 68*(4), 35-39.

Dee, A. L (2011). Preservice teacher application of differentiated instruction. *The Teacher Educator, 46*, 53-70. doi: 10.1080/08878730.2010.529987

Denzin, N. K. & Lincoln, Y. S. (2005). The Sage handbook of qualitative research. (3rd ed.). Thousand Oaks, CA: Sage.

Denzin, N. K., & Lincoln, Y. S. (1984). Handbook of qualitative research, Newbury Park, CA: Sage Publications.

Diamond, B. (1979). Myths of mainstreaming. *Journal of Learning Disabilities, 12*(4), 41-45. doi: 10.1177/002221947901200405

Douglas, M. E. (2014). Revisiting the art of undergraduate teaching in higher education: One person's journey towards enlightenment. *The Journal of Effective Teaching, 14*(2), 69-82.

Eisner, E. W. (1991). *The enlightened eye: Qualitative inquiry and the enhancement of educational practice.* New York, NY: Macmillan Publishing Company.

Ellins, J., & Porter, J. (2005). Departmental differences in attitudes to special educational needs in the secondary school. *British Journal of Special Education, 32*(4), 188-195. doi: 10.1111/j.1467-8578.2005.00396.x

Ernest, J. M., Heckaman, K. A., Thompson, S. E., Hull, K. M, & Carter, S. W. (2011). Increasing the teaching efficacy of beginning special education teacher using differentiated instruction: A case study. *International Journal of Special Education, 26*(1), 191-201.

Ferguson, D. L., Hanreddy, A., & Draxton, S. (2011). Giving students voice a strategy for improving teacher practice. *London Review of Education, 9*(1), 55-70. doi:10.1080/14748460.2011.550435

Forlin C., & Chambers, D. (2011). Teacher preparation for inclusive education: increasing knowledge but raising concerns. *Asia-Pacific Journal of Teacher Education, 39*(1), 17-32. doi:10.1080/1359866X.2010.540850

Friend, M. (2008). *Special education: Contemporary perspectives for school professionals*. Boston: Pearson.

Garrett, A. W. (1994, November). *What is Curriculum History and why is it Important?* Paper presented at the Annual Meeting of the American Educational Studies Association, Chapel Hill, NC.

Graham, L. J., & Slee, R. (2008). An illusory interiority: Interrogating the discourse/s of inclusion. *Educational Philosophy and Theory, 40*(2), 277-293. doi: 10.1111/j.1469-5812.2007.00331.x

Gurgur, H, & Uzuner, Y. (2010). A phenomenological analysis of the views on co-teaching applications in the inclusion classroom. *Educational Sciences: Theory and Practice, 10*(1), 311-331.

Hammond, H., & Inglalls, L. (2003). 'Teachers' attitudes toward inclusion: Survey results from elementary school teachers in three southwestern rural school districts.' *Rural Special Education Quarterly 22*(2), 24-30.

Hatch, T. (1999). Dilemmas of theory, design, and practice in curriculum and school improvement: Editor's introduction. *Peabody Journal of Education, 74*(1), 1-11. doi: 10.1207/s15327930pje7401.1

Heckaman, K. A., Thompson, S., Hull, K., & Ernest, J. M. (2009). Preparing teacher candidates to use evidence-based practices to impact student learning. *Southeastern Teacher Education Journal, 2*(3), 5-17.

Huber, K. D., Rosenfeld, J. G., & Fiorello, C.A. (2001). The differential impact of inclusion and inclusive practices on high, average, and low achieving general education students. *Psychology in the Schools, 38*(6), 2001. doi: 10.1002/pits.1038

Hunt, P., McDonnell, J., & Crockett, M.A. (2012). Reconciling an ecological curricular framework focusing on quality of life outcomes with the development and instruction of standards-based academic goals. *Research and Practice for Persons with Severe Disabilities, 37*(3), 139-152.

Imoukhuede, A. (2011). The fifth freedom: The constitutional duty to provide public education. Retreived on September 11, 2015 from http://nsuworks.nova.edu/law_facarticles/42

Isherwood, R. S., & Barger-Anderson, R. (2008). Factors affecting the adoption of co-teaching models in inclusive classrooms: One school's journey from mainstreaming to inclusion. *Journal of Ethnographic and Qualitative Research*, 2, 121-128.

King-Spears, M. E. (2008). Facts and fallacies: differentiation and the general education curriculum for students with special educational needs. *Support for Learning, 23*(2), 55-62. doi: 10.1111/j.1467-9604.2008.00371.x

Klassen, R. M., & Chiu, M. M. (2010). Effects on teachers' self-efficacy and job satisfaction: Teacher gender, years of experience, and job stress. *Journal of Educational Psychology, 102*(3), 741-756. doi: 10.1037/a0019237

Klingner, J. K., Vaughn, S., Hughes, M.T., Schumm, J. S., & Elbaum, B. (1998). Outcomes for students with and without learning disabilities in inclusive classrooms. *Learning Disabilities Research and Practice, 13*(3), 153-161.

Klingner, J. K., & Boardman, A. G. (2011). Addressing the "research gap" in special education through mixed methods. *Learning Disability Quarterly, 14*(3), 208-218. doi: 10.1177/0731948711417559

Kozik, P. L., Cooney, B., Vinciguerra, S., Gradel, K., & Black, J. (2009). Promoting inclusion in secondary schools through appreciative inquiry. *American Secondary Education, 38*(1),

77-91.

Leadley, S. (2004). Placing special education students in the regular classroom can be detrimental to all. Intellectual Conservative on July 9, 2015 from http://www.freerepublic.com/focus/news/1298994/posts

Lene, D. (2012). Definition for inclusive education. Samoa Inclusive Education. Retrieved from Samoa Inclusive Education on March 29, 2012 from http://www.seneseinclusive-edu.ws/index.php?option=com_content&view=article&id=86:definition-of-inclusive-education&catid=41:your-favourites

Leyser, Y., & Tappendorf, K. (2001). Are attitudes and practices regarding mainstreaming changing? A case of teachers in two rural school districts. *Education, 121*(4), 751-760.

Lindsay, G. (2007). Educational psychology and the effectiveness of inclusive education/mainstreaming. *British Journal of Educational Psychology, 77*, 1-24. doi: 10.1348/000709906X156881

Malian, I., & McRae, E. (2010). Co-Teaching Beliefs to Support Inclusive Education: Survey of Relationships between General and Special Educators in Inclusive Classes. *Electronic Journal for Inclusive Education, 2* (6), Article 2.

Martin, E. W. (1995). Case studies on inclusion: Worst fears realized. *The Journal of Special Education, 29*(2), 192-199. doi: 10.1177/002246699502900209

Mathison S., & Freeman, M. (1997, March). *The Logic of Interdisciplinary Studies*. Paper presented at the annual meeting of the American Educational Research Association, Chicago, IL.

Measures of Effective Teaching (MET) Project. (2010). Danielson's framework for teaching for classroom observation. [Brochure]. Bill & Melinda Gates foundation. Retrieved on

4/2/2013 from http://metproject.org/resources/Danielson%20FFT_10_24_10.pdf

Moores-Abdool, W. (2010). Included student with Autism and access to general curriculum: What is being provided? *Issues in Teacher Education, 19*(2), 153-167.

National Institute fro Urban School Improvement (NIUSI). (2005). *Inclusion and the other kids: Here's what research shows so far about inclusion's effect on nondisabled students*. [Brochure]. Staub, D: Author.

Obiakor, F. E., Harris, M., Mutua, K., Rotatori, A., & Algozzine, B. (2012). Making inclusion work in general education classrooms. *Education and Treatment of Children, 35*(3), 477-490. doi: 10.1353/etc.2012.0020

Orr, A.C. (2009). New special educators reflect about inclusion: Preparation and K-12 current practice. *Journal of Ethnographic and Qualitative Research, 3*, 228-239.

Panther, S. (2007). Demystifying inclusion: implications for sustainable inclusive practice. *International Journal of Inclusive Education, 11*(5-6), 627-643. doi: 10.1080/13603110600790373

Parent.Pals (2012). Special Education Dictionary. Retrieved September 25, 2012 from http://www.parentpals.com/2.0dictionary/dictnewsindex.html#SECTIONI

Pavri, S., & Monda-Amaya, I. (2000). Loneliness and students with learning disabilities in inclusive classrooms: Self-perceptions, coping strategies and preferred interventions. *Learning Disabilities Research and Practice, 15*, 22-33. doi: 10.1207/SLDRP1501_3

Pavri, S., & Monda-Amaya, I. (2001). Social support in inclusive schools: Student and teacher perspectives. *Exceptional Children, 67*, 391-411.

Pawlowicz, B. (2001). *The effects of inclusion on general education students*. Unpublished master's thesis, University of Wisconsin-Stout, Wisconsin.

Pham, H. L. (2012). Differentiated Instruction and the need to integrate teaching and practice. *Journal of College Teaching and Learning, 9*(1), 13-20.

Piburn, M., & Sawada, D. (2000). Reformed teaching observation protocol (ROTP) reference manual (Report No. ACEPT-TR-IN00-32) Arlington, VA: National Science Foundation. (ERIC Document Reproduction Service No. ED447205)

PSEA. (2010). Professional learning exchange: Charlotte Danielson's framework for teaching. PSEA Education Services Division. Retrieved on 4/1/2013 from: http://www.psea.org/uploadedFiles/Publications/Professional_Publications/Advisories/DanielsonFrameworkForTeaching_Advisory.pdf

Pugach, M. C., & Warger, C.L. (2001). Curriculum matters: Raising expectations for students with disabilities. *Remedial and Special Education, 22*, 194-196. doi: 10.1177/074193250102200401

Ravitch, D. (2002, March). Paper presented at the White House Conference on Preparing Tomorrow's Teachers, Washington, DC.

Rea, P. J., McLaughlan, V. L., & Walther-Thomas, C. (2002). Outcomes for students with disabilities in inclusive and pullout programmes. *Exceptional Children, 68*, 203-223. doi: 10.1177/001440290206800204

Roach, V., & Salisbury, C. (2006). Promoting systemic, statewide inclusion from the bottom up. *Theory into Practice, 45*(3), 279-286. doi: 10.1207/s15430421tip4503_10

Ruma-Viel, K, Houchins, D., Jolivette, K., & Benson, G. (2010). Efficacy beliefs of special educators: The relationships among collective efficacy, teacher self-efficacy, and job satisfaction. *Teacher Education and Special Education, 33*(3), 225-233.

Schumm, J. S. & Vaughn, S. (1995). Meaningful professional development in students with

disabilities. *Remedial and Special Education, 16*, 344-353. doi: 10.1177/074193259501600604

Scruggs, T. E., & Mastropieri, M.A. (2013). Individual differences and learning challenges. *Theory Into Practice, 52*, 63-72. doi:10.1080/00405841.2013.795443

Soukup, J. H., Wehmeyer, M. L., Bashinski, S. M., & Bovaird, J. A. (2007). Classroom variables and access to the general curriculum for students with disabilities. *Council for Exceptional Children, 74(*1), 101-120. doi: 10.1177/001440290707400106

Sparks, D. (1999). Assessment without victims: An interview with Rick Stiggins. *Journal of Staff Development, 20*(2), 52-56.

Spencer, R. S. (2010). *The effects of Inclusion on the academic achievement of regular education students.* Unpublished doctoral dissertation, Georgia southern University, Statesboro.

Staub, D. (1999). On inclusion and the other kids: Here's what research shows so far about inclusion's effect on nondisabled students. (Report No. UD 033 427) Washington, DC: Special Education Programs. (ERIC Document Reproduction Service No. ED439206)

Stavroula, V., & Koutselini, M. I. (2009). Application and evaluation of differentiation instruction in mixed ability classrooms. Paper presented at the 4th Hellenic Observatory PhD Symposium, LSE.

Stavroula, W. A., Leonidas, K., & Mary, K. (2011, January). *Investigating the Impact of Differentiated Instruction in Mixed Ability Classrooms: It's Impact on the Quality and Equity Dimensions of Education Effectiveness*. Paper presented at the International Congress for School Effectiveness and Improvement 2011, Limassol, Cyprus.

Thompkins, R., & Deloney, P. (1995). Inclusion: The pros and cons. Retrieved December 7, 2011 from http://www.sedl.org/change/issues/issues43.hrml

Tomlinson, C.A. (1999). *The Differentiated Classroom: Responding to the Needs of All Learners.* Alexandria, VA: Association for Supervision and Curriculum Development.

Tomlinson, C. A. (2000). Reconcilable Differences? Standards-based teaching and differentiation. *Educational Leadership, 58*(1), 6-11.

Tomlinson, C. A. (2001). *How to differentiate instruction in mixed-ability classrooms*, (2nd ed). Alexandria, VA: Association for Supervision and Curriculum Development.

Trela, K., & Jimenez, B. (2013). From different to differentiated: Using "ecological framework" to support personally relevant access to general curriculum for students with significant intellectual disabilities. *Research and Practice for Persons with Severe Disabilities, 38*(2), 117-119.

Urquhart, C., Lehmann, H., & Myers, M.D. (2010). Putting the "theory" back into grounded theory: guidelines for grounded theory studies in information systems. *Information System Journal, 20*(4), 357-381. doi: 10.1111/j.1365-2575.2009.00328x

U.S. Department of Education, Office of Special Education and Rehabilitative Services. (2002). *A new era: Revitalizing special education for children and their families*. Washington, DC: Author.

U.S. Department of Education (2010). Thirty-five years of progress in educating children with disabilities through IDEA. Retrieved April 13, 2010 from www2.ed.gov/about/offices/list/osers/**idea**35/history/index.html

Walker, T. J. (2012). *Attitudes and Inclusion: An Examination of Teachers' Attitudes Toward Including Students with Disabilities*. Unpublished doctoral dissertation, Loyola University, Chicago.

Wallace, T., Anderson, A. R., Bartholomay, T. & Hupp, S. (2002). An ecobehavioral

examination of high school classrooms that include students with disabilities. *The Council for Exceptional Children, 68*(3), 345-359. doi: 10.1177/001490290206800304

Watkins, D., Kritsonis, W.A., Lecturer, V., & Alumnus, D. (2008). Aristotle, philosophy, and the ways of knowing the realms of meaning: A national study on integrating a postmodernist approach to education and student academic achievement. *National Forum of Applied Educational Research Journal, 21*(3), 1-9.

Wedell, K. (2008). Confusion about inclusion: Patching up or system change? *British Journal of Special Education, 35*(3), 127-135. doi: 10.1111/j.1467-8578.2008.00386x

Wehmeyer, M. L., Lattin, D. L., Lapp-Rincker, G., & Agran, M. (2003). Access to the general curriculum of middle school students with mental retardation: An observational study. *Remedial and Special Education, 24*(5), 262-272. doi: 10.1177/07419325030240050201

White, M., & Mason, C.Y. (2006). Components of a successful mentoring program for beginning special education teachers: Perspectives from new teachers and mentors. *Teacher Education and Special Education, 29*, 191-201. doi: 10.1177/0888406402900305

Winzer, M.A. (1998). The inclusion movement and teacher change: Where are the limits? *McGill Journal of Education, 33*(3), 229-229-251.

Woolfolk, A. E. (1998). *Educational Psychology* (7th ed.). Boston: Allyn and Bacon.

Yell, M. L., Rogers, D., & Rogers, E. L. (1998). The legal history of special education: What a long, strange trip it has been. *Remedial and Special Education, 19*(4), 219-228. doi: 10.1177/074193259801900405

Appendix A

Staff Interview Questionnaire

1. What is your overall level of satisfaction with your job as a teacher?

Very dissatisfied Somewhat dissatisfied Somewhat Satisfied Very Satisfied.

2. Have you taken any Special Education classes? Do you feel they have helped in your classroom and how have the classes helped you prepare to teach students with disabilities?

3. How do you use the IEP's (Individual Educational Plans) for your lesson planning and lesson execution?

4. Do you feel that teaching an inclusion section of math/science has modified or changed the content that you teach your students?

5. What are the objectives that you hope your classes will master this year? (Please list all the objectives that you are to cover within the course of this school year that the student are expected to master.)

6. How has inclusion in education affected your class preparation or class maintenance for both your inclusion classes and non-inclusion classes?

7. What are the challenges of teaching inclusion and non-inclusion classes?

Appendix B

Student Motivational Survey

1. How much do you like Science/Math?

Very Much Somewhat Not at all

2. Do you think you are a motivated student?

Yes Somewhat No

3. On the following questions please check the amount you do for the questions:

Activity	Always	Sometimes	Never
Do an equal share of work on partnered projects or activities?			
Help other students in class understand information?			
Explain to another student that their actions in class are not acceptable?			
Get frustrated with other people who do not understand information?			
Wish you could just work by yourself to get the activities/projects done at your own pace?			

4. Would you consider yourself a rabbit or a turtle when it comes to schoolwork (academics)?

Rabbit – gets work done when assigned, takes notes without being told, problem solves how to complete assigned tasks, in a group activity will give jobs to people to do and work to pull activity together.

Turtle – does some work, waits to take notes till being told, in groups allows someone else to assign you a task, goes with the flow of things.

Rabbit Turtle

5. How often do differences of other students bother you in a classroom? (Different personality, learning style, how they act, etc)

Always bothered Sometime bothered Never bothered

Appendix C

Initial Structured Discussion Group

for Teachers who Teach Inclusion and Non-inclusion Classrooms:

The following protocol will be considered for the student focus group interviews.

Date:

Time:

Place

Interviewer:

Procedure:

Teachers will be asked to give verbal permission to have their interview recorded and then transcribed for data collection purposes. The teachers will have previously filled out a questionnaire that had gathered information on teacher motivation, knowledge on special education, and years of experience.

The following statement will be read to each interviewee:

This interview is being conducted for the purpose of research. Information obtained during this interview will be analyzed, and with your permission, included in the findings of this study. This interview is going to be recorded once you have given me verbal consent. Once I begin taping, I will again ask you if you consent to the recording of this interview. Do you have any questions before we begin? Do you consent to the recording of this interview?

Begin recording. "Do you consent to the recording of this interview? Please state your focus group letter and table number that is found in front of you. I will ask you a series of 5 questions. Please feel free to share your true feelings on these questions without feeling that they are being judged in anyway.

Questions:

1. What expectations do you have for your classes going into this school year?

2. Do you have any concerns about deliverance of the curriculum content in any of your classes?

3. Do you feel that the inclusion of students with IEPs in your general education class is going to create any challenges for you in regards to teaching the curriculum material?

4. What experience do you have working with students with IEPs? Do you think that having knowledge of special education is going to help you with implementation of the curriculum?

5. How did it come about that you were going to teach the classes assigned to you this school year?

Appendix D

End of Year Structured Discussion Group

for Teachers who Teach Inclusion and Non-Inclusion Classrooms:

The following protocol will be considered for the student focus group interviews.

Date:

Time:

Place

Interviewer:

Procedure:

Teachers will again be asked to give verbal permission to have their interview recorded and then transcribed for data collection purposes. The teachers will have previously filled out a questionnaire that had gathered information on teacher motivation, knowledge on special education, and years of experience.

The following statement will be read to each interviewee:

This interview is being conducted for the purpose of research. Information obtained during this interview will be analyzed, and with your permission, included in the findings of this study. This interview is going to be recorded once you have given me verbal consent. Once I begin taping, I will again ask you if you consent to the recording of this interview. Do you have any questions before we begin? Do you consent to the recording of this interview?

Begin recording. "Do you consent to the recording of this interview? Please state your focus group letter and table number that is found in front of you. I will ask you a series of 4 questions. Please feel free to share your true feelings on these questions without feeling that they are being judged in anyway.

Questions:

1. Do you feel that you met the course objectives for each section you teach? What evidence did you gather to determine this decision?

2. As it is the end of the school year are all the courses you teach at the same point in learning the curriculum?

3. What changes to your teaching approach or assigned work did you have to make in the inclusion and non-inclusion classrooms to maintain a constant level of progression with the curriculum for all students?

4. Was teaching an inclusion classroom any different than a non-inclusion classroom? What were some examples of how the classes are the same and different when comparing the two?

Appendix E

Informed Consent for Participants-Parents

INFORMED CONSENT
For a Research Study entitled
"The Impact of Inclusion on the General Education Curriculum"

Your child has been invited to participate in a research study to examine any effects inclusion has on the general education curriculum taught within the confines of a public school classroom. The study is being conducted by Stephanie Hoelper, Doctoral candidate, und the direction of Dr. Douglas Lare, Professor in the East Stroudsburg University Department of Professional and Secondary Education. Your child was selected as a participant because they were enrolled in a class that was selected for the study based on their schedule.

If you decide to allow your child to participate in this research study, they will be asked to complete a brief survey. The survey is short and will be distributed by their teacher in the classes that have been selected. The survey will be given within the first two weeks of the school year.

I will be also be observing your child's class three times during the year. I am not going to be focused on the students in the classroom, but at the content that is being taught to the students. All the data collected will be anonymous with no indication of your child's participation in the class.

The risks associated with participating in this study are minimal to none. No discomfort is expected due to the survey being completely anonymous.

If you chose to allow your child to participate in this study, you can expect your child to gain a better understanding of how classes can be different even when they are the same level. They will also gain a better understanding of their needs from their teachers and gain awareness of possible methods to assist them in success within these classes from other participants in the focus groups.

There is no compensation for taking part in this study.

If you decide to allow your child to participate, there will have no costs to pay or anticipate.

If you change your mind about your child participating, you can withdraw at any time during the study. Their participation is completely voluntary. If you choose to withdraw your child, their data can be withdrawn as long as it is identifiable. Your decision about whether or not to participate or to stop participating will not jeopardize your future relations with ESU, the Department of Professional and Secondary Education.

Any information obtained in connection with this study will remain *anonymous or confidential.* Information obtained through your child's participation may be used to fulfill educational requirements, published in a professional journal and/or presented at a professional meeting.

If you have questions about this study, please ask them now or contact Stephanie Hoelper at shoelper@sburg.org or 570-994-2606 or Dr. Douglas Lare at East Stroudsburg University at dlare@po-box.esu.edu. A copy of this document will be given to you to keep.

If you have questions about your rights as a research participant, you may contact the East Stroudsburg University Institutional Review Board by phone (570) 422-3336 or email at sdavis@po-box.esu.edu.

HAVING READ THE INFORMATION PROVIDED, YOU MUST DECIDE WHETHERE OR NOT YOU WISH TO PARTICIPATE IN THIS RESEARCH STUDY. YOUR SIGNATURE INDICATES YOUR WILLINGNESS TO PARTICIPATE.

_____	_____
Participants Signature Date	Investigators obtaining consent Date
_____	_____
Printed Name	Printed Name
	_____
	Co-Investigator Date
	_____
	Printed Name

Appendix F

Informed Consent for Participants-Students

INFORMED CONSENT
For a Research Study entitled
"The Impact of Inclusion on the General Education Curriculum"

You have been invited to participate in a research study to examine any effects inclusion has on the general education curriculum taught within the confines of a public school classroom. The study is being conducted by Stephanie Hoelper, Doctoral candidate, und the direction of Dr. Douglas Lare, Professor in the East Stroudsburg University Department of Professional and Secondary Education. You were selected as a participant because you were enrolled in a class that was selected for the study based on your schedule.

If you decide to participate in this research study, you will be asked to complete a brief survey. The survey is short and will be distributed by your teacher in the classes that have been selected. The survey will be given within the first two weeks of the school year.

I will be also be observing your class three times during the year. I am not going to be focused on any of the students in the classroom, but at the content that is being taught to the students. All the data collected will be anonymous with no indication of your participation in the class.

The risks associated with participating in this study are minimal to none. No discomfort is expected due to the survey being completely anonymous.

If you chose participate in this study, you can expect to gain a better understanding of how classes can be different even when they are the same level. You will also gain a better understanding of you needs from your teachers and gain awareness of possible methods to assist you in success within these classes from other participants in the focus groups.

There is no compensation for taking part in this study.

If you decide to participate, there will have no costs to pay or anticipate.

If you change your mind about participating, you can withdraw at any time during the study. Your participation is completely voluntary. If you choose to withdraw, their data can be withdrawn as long as it is identifiable. Your decision about whether or not to participate or to stop participating will not jeopardize your future relations with ESU, the Department of Professional and Secondary Education.

Any information obtained in connection with this study will remain *anonymous or confidential.* Information obtained through your participation may be used to fulfill educational requirements, published in a professional journal and/or presented at a professional meeting.

If you have questions about this study, please ask them now or contact Stephanie Hoelper at

shoelper@sburg.org or 570-994-2606 or Dr. Douglas Lare at East Stroudsburg University at dlare@po-box.esu.edu. A copy of this document will be given to you to keep.

If you have questions about your rights as a research participant, you may contact the East Stroudsburg University Institutional Review Board by phone (570) 422-3336 or email at sdavis@po-box.esu.edu.

HAVING READ THE INFORMATION PROVIDED, YOU MUST DECIDE WHETHERE OR NOT YOU WISH TO PARTICIPATE IN THIS RESEARCH STUDY. YOUR SIGNATURE INDICATES YOUR WILLINGNESS TO PARTICIPATE.

_____	_____
Participants Signature Date	Investigators obtaining consent Date
_____	_____
Printed Name	Printed Name
	_____
	Co-Investigator Date
	_____
	Printed Name

Appendix G

Informed Consent for Participants - Teachers

INFORMED CONSENT
For a Research Study entitled
"The Impact of Inclusion on the General Education Curriculum"

You have been invited to participate in a research study to examine any effects inclusion has on the general education curriculum taught within the confines of a public school classroom. The study is being conducted by Stephanie Hoelper, Doctoral candidate, und the direction of Dr. Douglas Lare, Professor in the East Stroudsburg University Department of Professional and Secondary Education. You have been selected as a participant because you two classes of the same level, however one of the classes contain students with IEP's and one has no students with IEP's.

If you decide to participate in this research study, you will be asked to complete a brief pre and post survey. These surveys are short and will be distributed through your school email account. The survey will be sent to you in August of the 2013-2014 school year and then again in May.

You will also be asked to attend bi-weekly discussion groups during the school year. During the discussion groups the responses will be recorded, but you will remain anonymous based on a coding system that is put in place. In the discussion group sessions you will be asked how they feel about certain topics that occur in their class and what their expectations are for the class.

You will be asked to supply all documents including lesson plans, tests/quizzes, worksheets, presentations, and any other document that you use within your classes with the requirements for each student. These documents will be reviewed and will be sent via email weekly throughout the course of the study.

The last piece of the study is that I will be observing your two classes three times during the year. I am not going to be focused on the students in the classroom, but at the content that is being taught to the students watching for changes in the general education curriculum that is taught.

The risks associated with participating in this study are minimal to none. One discomfort you might have is expressing your true feelings during a focus group, but participation is done through volunteering. To minimize any risk of discomfort you might have I have created a coding system where you will remain anonymous to anyone who reads the study or the data collected.

If you chose to participate in this study, you can expect to gain a better understanding of how your teaching might differ based on having IEP students in the class. You might also gain a better understanding of techniques that could assist in teaching all students the content for your classes.
There is no compensation for taking part in this study.

If you decide to participate, there will have no costs to pay or anticipate.

If you change your mind about participating, you can withdraw at any time during the study. Your participation is completely voluntary. If you choose to withdraw, your data can be withdrawn as long as it is identifiable. Your decision about whether or not to participate or to stop participating will not jeopardize your future relations with ESU, the Department of Professional and Secondary Education.

Any information obtained in connection with this study will remain *anonymous or confidential.* Information obtained through your participation may be used to fulfill educational requirements, published in a professional journal and/or presented at a professional meeting.

If you have questions about this study, please ask them now or contact Stephanie Hoelper at shoelper@sburg.org or 570-994-2606 or Dr. Douglas Lare at East Stroudsburg University at dlare@po-box.esu.edu. A copy of this document will be given to you to keep.

If you have questions about your rights as a research participant, you may contact the East Stroudsburg University Institutional Review Board by phone (570) 422-3336 or email at sdavis@po-box.esu.edu.

HAVING READ THE INFORMATION PROVIDED, YOU MUST DECIDE WHETHERE OR NOT YOU WISH TO PARTICIPATE IN THIS RESEARCH STUDY. YOUR SIGNATURE INDICATES YOUR WILLINGNESS TO PARTICIPATE.

_____	_____
Participants Signature Date	Investigators obtaining consent Date
_____	_____
Printed Name	Printed Name
	_____
	Co-Investigator Date
	_____
	Printed Name

Appendix H

Danielson Observation Domain 3

Observation Date:_____ Period:_____

Class Type:_____ Teacher:_____

Components	Unsatisfactory	Basic	Proficient	Distinguished
3a: Communicating with Students				
3b: Using Questioning and Discussion Techniques				
3c: Engaging Students in Learning				
3d: Using Assessment in Instruction				
3e: Demonstrating Flexibility and Responsiveness				

Observation Number:_____

Appendix I

Earth Science Objective Checklist

(Follow-up survey to teachers based on their initial responses to survey question 7)

Unit 1: The Nature of Science

- The students can differentiate between science and pseudoscience

  Advanced Proficient Basic Below Basic

- The students can identify the steps of scientists often use to solve problems

  Advanced Proficient Basic Below Basic

- The students can apply the steps of the scientific method to real life examples

  Advanced Proficient Basic Below Basic

- The students can describe why scientists use variables to ensure they are testing the appropriate factor in an experiment

  Advanced Proficient Basic Below Basic

- The students can distinguish between dependent and independent variables.

  Advanced Proficient Basic Below Basic

- The students can identify and use the SI units and symbols for length, volume, mass, density, time and temperature.

  Advanced Proficient Basic Below Basic

- The students can propose why accurate measurement and record keeping are important in scientific investigations.

  Advanced Proficient Basic Below Basic

- The students can define objectivity and subjectivity in relation to avoiding bias in science.

  Advanced Proficient Basic Below Basic

Unit 2: The Earth and its Systems

- The students can describe the composition, properties, and scale of the earth

  Advanced Proficient Basic Below Basic

- The students can describe the history of the formation of the earth.
  Advanced Proficient Basic Below Basic

- The students can describe the history of the formation of the oceans and atmosphere

  Advanced Proficient Basic Below Basic

- The students can explain how the force of gravity keeps the earth in orbit around the sun

  Advanced Proficient Basic Below Basic

- The students can differentiate between rotation and revolution

  Advanced Proficient Basic Below Basic

- The students can explain the reasons for the seasons, as well as day and night.

  Advanced Proficient Basic Below Basic

- The students can explain how scientists discovered that the earth is a sphere and that it is not at the center of the universe, or even of the solar system.

  Advanced Proficient Basic Below Basic

- The students can relate latitude and longitude coordinate to geographic locations

  Advanced Proficient Basic Below Basic

- The students can explain how scientists know the age of the earth by radioactive dating of rocks.

  Advanced Proficient Basic Below Basic

- The students can describe the relationships among the different spheres of the earth, atmosphere (air), hydrosphere (water), geosphere (land), and biosphere (living things.)

  Advanced Proficient Basic Below Basic

- The students can explain that almost all earth processes are the result of energy (from the sun and earth's interior) flowing between earth's systems.

  Advanced Proficient Basic Below Basic

Unit 3: Meteorology

- The students can observe and interpret local weather variables (i.e temperature, relative humidity, dew point temperature, wind speed and direction, precipitation type, barometric pressure).

  Advanced Proficient Basic Below Basic

- The students can identify major cloud types and predict the short-term weather based on each

  Advanced Proficient Basic Below Basic

- The students can demonstrate how clouds form

  Advanced Proficient Basic Below Basic

- The students can interpret meteorological maps for weather conditions in any given region with the focus given to frontal boundaries, temperature, precipitation and type of air masses (i.e. continental, maritime, polar, tropical, arctic)

  Advanced Proficient Basic Below Basic

- The students can analyze a brief history (e.g. 30 days) of weather observation data from Stroudsburg for correlations between cloud type, temperature, dew point temperature, relative humidity, wind direction and precipitation.

  Advanced Proficient Basic Below Basic

- The students can explain how the unequal heating of the air, ocean, and land produces wind and ocean currents

  Advanced Proficient Basic Below Basic

- The students can determine the relationship between air pressure and temperature using various laboratory experiments and correlate the relationship to atmospheric conditions (e.g. high pressure air has cooler temperature and less humidity/clouds).

  Advanced Proficient Basic Below Basic

- The students can forecast the weather for any region after observing several days of weather map data and illustrate future weather prediction with frontal boundaries, high and low air pressure systems, and types of precipitation on a map.

  Advanced Proficient Basic Below Basic

- The students can compare and contrast thunderstorms, tornadoes and hurricanes with respect to formation, associated hazards and precautionary measures.

  Advanced Proficient Basic Below Basic

- The students can debate the necessity (or lack thereof) to changing human resource consumption rates to stall or reverse Earth's current climate change.

  Advanced Proficient Basic Below Basic

- The students can draw conclusions of Stroudsburg's past climate based on local glacial evidence.

  Advanced Proficient Basic Below Basic

Unit 4: Geology – Rocks and Minerals

- The students can differentiate between rocks and minerals

  Advanced Proficient Basic Below Basic

- The students can compare and contrast a given sample of rocks and minerals noting physical similarities and differences

  Advanced Proficient Basic Below Basic

- The students can define mineral and the properties that make an object a mineral (i.e. solid, inorganic, definite chemical composition, crystallized, naturally occurring).

  Advanced Proficient Basic Below Basic

- The students can evaluate objects to determine if they are minerals and non minerals

  Advanced Proficient Basic Below Basic

- The students can demonstrate five mineral property tests used to identify minerals using the mineral property tests.

  Advanced Proficient Basic Below Basic

- The students can describe the characteristics of the three rock types (i.e. sedimentary, igneous and metamorphic) and the processes under which they form.

  Advanced Proficient Basic Below Basic

- The students can assess the most effective mineral property test to use to identify a sample group of minerals, which have similar characteristics (e.g. color, luster).

  Advanced Proficient Basic Below Basic

- The students can explain how minerals form through precipitation of solutions and magma crystallization

  Advanced Proficient Basic Below Basic

- The students can describe sources and uses of minerals

  Advanced Proficient Basic Below Basic

- The students can identify rock types of a sample collection and deduce how they formed based on their physical characteristics and the rock cycle.

  Advanced Proficient Basic Below Basic

- The students can explain how fossils form and how they provide evidence about ancient plants and animals and there respective environments.

  Advanced Proficient Basic Below Basic

- The students can predict the potential impact of human-made processes (e.g. manufacturing, agriculture, transportation, mining) on changes to Earth resources (e.g. air, water, earth materials, plans and animals)

  Advanced Proficient Basic Below Basic

Unit 5: Geology – Plate Tectonics, Volcanoes, and Earthquakes

- The students can test evidence of Continental Drift hypothesis by simulating reconstruction of Wegener's Pangaea

  Advanced Proficient Basic Below Basic

- The students can compare and contrast the three types of tectonic plate boundaries (i.e convergent, divergent, transform) in reference to direction of movement and geological results and hazards (e.g. crustal formation or destruction, volcanic geological results and hazards (e.g. crustal formation or destruction, volcanic mountains, earthquakes, tsunamis, island chain)

  Advanced Proficient Basic Below Basic

- The students can identify animations or images of tectonic boundaries (i.e. convergent, divergent, and transform)

  Advanced Proficient Basic Below Basic

- The students can identify parts of a volcano (i.e crater, vent, magma chamber)

  Advanced Proficient Basic Below Basic

- The students can contrast the three seismic waves generated by an earthquake (i.e. primary, secondary, land)

  Advanced Proficient Basic Below Basic

- The students can analyze simulated earthquake data and calculate magnitude and epicenter location of earthquake

  Advanced Proficient Basic Below Basic

- The students can compare and contrast three volcano types (i.e. stratovolcano, cinder cone, and shield) in reference to eruption type, cone shape, hazards, and materials erupted

  Advanced Proficient Basic Below Basic

- The students can critique the Continental Drift hypothesis in reference to the evidence presented by Alfred Wegener (e.g. shape of continents, similar fossils found on widely separated continents, similar rock types of widely separated continents)

  Advanced Proficient Basic Below Basic

- The students can analyze seismograms from an actual earthquake and collect scientific information such as magnitude and distance of the seismograph station to the earthquake's epicenter.

  Advanced Proficient Basic Below Basic

- The students can compare and contrast different earthquakes' characteristics (e.g. s-p lag time, magnitude, proximity to epicenter) based on seismic data
-

  Advanced Proficient Basic Below Basic

- The students can explain earthquake hazards and safety precautions

  Advanced Proficient Basic Below Basic

- The students can illustrate Earth's interior, including convection currents and limits of primary and secondary seismic wave dispersion through the planet, detailing the solid an liquid layers.

  Advanced Proficient Basic Below Basic

Unit 6: Earth's Water Systems

- The students can explain how water is distributed on Earth in both liquid and solid form (e.g. oceans, rivers, groundwater, glaciers, lakes)

  Advanced Proficient Basic Below Basic

- The students can describe the water cycle and the physical processes on which it depends (i.e. evaporation, condensation, precipitation, transpiration, runoff).

  Advanced Proficient Basic Below Basic

- The students can describe the patterns and causes of ocean currents, including surface currents, density, currents and upwelling.

  Advanced Proficient Basic Below Basic

- The students can describe the motion and characteristics of waves in the ocean.

  Advanced Proficient Basic Below Basic

- The students can compare spring tides to neap tides

  Advanced Proficient Basic Below Basic

- The students can compare and contrast the characteristics of saltwater and freshwater on the basis of their physical characteristics.

  Advanced Proficient Basic Below Basic

- The students can locate and describe the features of the ocean basins using a physical map.

  Advanced Proficient Basic Below Basic

- The students can analyze the impact of earth's water systems of local weather or regional climate (e.g. land/ocean breezes, lake effect snow, El Nino Southern Oscillation, ocean surface currents).

  Advanced Proficient Basic Below Basic

- The students can interpret maps to describe the physical characteristics of Stroudsburg's watershed (e.g. streams, length, towns, topography, headwaters, confluence with Delaware River, evidence of historic glaciations).

  Advanced Proficient Basic Below Basic

Unit 7: Astronomy

- The students can describe properties of the moon and sun

  Advanced Proficient Basic Below Basic

- The students can compare the life cycles of high and low mass stars

  Advanced Proficient Basic Below Basic

- The students can explain the fate of our sun, an average star.

  Advanced Proficient Basic Below Basic

- The students can create a model of the Earth-Moon-Sun system to simulate the changing phases of the moon, solar eclipse, lunar eclipse, and positions of the moon during spring and neap tide.

  Advanced Proficient Basic Below Basic

- T he students can compare and contrast units/measurements use to describe distances in space (i.e. miles, astronomical units, light years).

  Advanced Proficient Basic Below Basic

- The students can compare and contrast the sizes and distances from earth of objects found in the universe (i.e. moons, planets, stars, extra-solar systems, star clusters, galaxies).

  Advanced Proficient Basic Below Basic

- The students can draw conclusions as to why Pluto is no longer officially considered a planet based on characteristics and classification of the other eight planets in our solar system.

  Advanced Proficient Basic Below Basic

- The students can observe and describe the motion of satellites, stars, constellations, and planets as viewed from Earth through the year.

  Advanced Proficient Basic Below Basic

- The students can calculate travel time of current and future transports to various space objects given approximate distances and speed of craft.

  Advanced Proficient Basic Below Basic

- The students can describe the history of space exploration, current operations and plans for future missions.

  Advanced Proficient Basic Below Basic

Appendix J

STROUDSBURG AREA SCHOOL DISTRICT

123 Linden Street
Stroudsburg, Pennsylvania 18360
Phone: 570-421-1990 FAX: 570-424-5986

Dr. John A. Toleno, Superintendent

Stephen Brodmerkel
Assistant Superintendent for Personnel

Donna M. Mayersky
Business Manager

Wanda Lesoine
Assistant Superintendent for C & I

June 4, 2015

Ms. Stephanie Hoelper
449 Wooddale Road
East Stroudsburg, PA 18302

Dear Ms. Hoelper:

Please be advised that I have reviewed all of your information with regard to your doctoral study and am hereby granting permission for you to perform doctoral research in the Stroudsburg Area School District. I wish you the best of luck in all aspects of your research study.

Should you have need for anything further, please do not hesitate to contact me.

Sincerely,

Dr. John A. Toleno
Superintendent

Name: _____

METEOROLOGY I TEST
8th Grade Earth Science

Multiple Choice: Read each question and write the letter of the *best* answer on your answer sheet. (1 pt. each)

1. **In the water cycle, evaporated water rises in the air, cools down, and _____.**
   A. runs into lakes and oceans
   B. becomes groundwater
   C. condenses into clouds

2. **Air at the _____ has more heat energy than air at the _____.**
   A. north pole…equator
   B. ocean…equator
   C. equator…north pole

3. **The only thing that exists as a solid, liquid and gas in the air is _____.**
   A. nitrogen
   B. water
   C. oxygen

4. **What occurs on June 21 in the northern hemisphere?**
   A. spring equinox
   B. summer solstice
   C. winter solstice

5. **What season begins on March 21 in the northern hemisphere?**
   A. spring
   B. summer
   C. March

6. **What do we experience when water vapor condenses and falls to the ground?**
   A. evaporation
   B. precipitation
   C. condensation

7. **What describes the amount of water molecules in the air <u>compared</u> to the total that could be in the air?**
   A. relative humidity
   B. evaporation
   C. dew point

8. **What kind of weather occurs if the <u>air pressure increases</u> (*gets higher*)?**
   A. cloudy, warmer
   B. cloudy, cooler
   C. sunny, cooler

9. **Condensation forms on the outside of a cold can because the air temperature cooled to the _____.**
   A. dew point
   B. frost
   C. relative humidity

10. **What would make <u>water drops form</u> on grass in the morning?**
    A. air is unsaturated
    B. the relative humidity decreases
    C. the air near the ground cools to the dew point temperature

11. **Why does Earth experience changes in the seasons?**
    A. Earth rotates on its axis
    B. Earth's axis is tilted as the planet revolves around the sun
    C. distance between Earth and the sun changes

12. **When the north pole is <u>tilted towards the sun</u>, North America will experience _____.**
    A. lower afternoon sun
    B. shorter days
    C. summer

13. <u>Wind</u> is caused by differences in _____ and moves from _____.

A. dew point.....wet to dry
B. air pressure.....high to low
C. air pressure.....low to high

14. Heat energy is best described as:

A. something that's hot
B. how fast something boils
C. movement or shaking of molecules

15. If low pressure air approaches us, the weather will become:

A. cloudier
B. cooler
C. drier

Fill in the Blank: Complete each statement with the best answer and write that on your answer sheet. (1 pt. each)

16. A _____ describes and predicts the weather.

17. If *frost* is on the ground and the *dew point temperature* is 25° F, the air temperature is _____.

18. The <u>freezing</u> point of water on the <u>*Fahrenheit*</u> scale is _____ degrees.

19. Wind is caused by differences in air _____.

20. Water condensing on the side of a cold can comes from where? (**inside can** or **the air**) ← *choose one*

21. Imagine wind blowing on your wet skin. You feel cooler because the water molecules _____.

22. If the dew point is 0 °C, and the temperature drops to the dew point, _____ forms.

23. If the relative humidity is 100% the air is _____, and fog, rain, or dew forms.

Convection Currents in Air: The following drawing shows the air moving above a land surface. The arrows show the direction of air movement.
Letters **A** and **B** are two different barometers spaced several miles apart. (1 point each)

24. Which barometer would record the <u>lowest</u> air pressure? _____

25. Where would *temperature* be the <u>warmest</u>? _____

26. Which way would the wind blow at the surface? (Circle: ***<u>A to B</u>*** or ***<u>B to A</u>***).

27. Which barometer station would most likely have <u>clear skies</u> over it?

_____

Which Way will the Wind Blow?

The drawing shows 3 barometers (X, Y and Z) on a land surface. The *units for each air pressure reading are inches of mercury.* (1 pt. each)

28. Which barometer records the highest pressure? Choose **X** **Y** or **Z**

29. Which way does the wind blow between barometers X, Y, and Z?
(hint: draw arrows!)

A. from X to Z
B. from Z to Y and from X to Y
C. from Z to X

30. The fastest wind is between barometers _____.

A. X and Y
B. Y and Z

Finding Relative Humidity: Use the thermometers and the chart below to answer the questions. Fill in answers on your answer sheet. *(1 point each).*

31. What is the temperature of the <u>dry bulb</u> thermometer? _____

32. What's the temperature of the <u>wet bulb</u> thermometer? _____

33. Based on the temperatures shown, what is the <u>relative humidity</u> of the air? _____

EXTRA CREDIT →

---

34. EXTRA CREDIT: Choose only **ONE** question below and answer with several sentences under the question. (**3 POINTS = 7% *extra***)

- *When using a psychrometer to measure humidity, why does the temperature drop on the wet bulb?*

- *When walking from the top of a mountain to the bottom, what happens to the air pressure? Explain why this happens.*

- *How does frost form on the grass?*

****DO NOT WRITE ON THIS TEST****

METEOROLOGY I TEST
8th Grade Earth Science (total points)

True or False: Read each sentence below and write whether it is *"true"* or *"false"* on your answer sheet. (1 pt. each)

1. Earth is farthest from the sun in the summer.
2. Air moves from low pressure to high pressure areas.
3. As air pressure increases, the mercury in a barometer rises.
4. Frost falls from clouds like rain or snow.
5. Besides at absolute zero, all atoms (in tables, water and air for example) are in motion.

Multiple Choice: Read each question and write the letter of the *best* answer on your answer sheet. (1 pt. each)

6. **In the water cycle, evaporated water rises in the air, cools down, and _____.**
   A. becomes groundwater
   B. runs into lakes and oceans
   C. condenses into clouds

7. **Air at the _____ has more heat energy than air at the _____.**
   A. north pole, equator
   B. ocean, equator
   C. equator, north pole
   D. Tropic of Cancer, equator

8. **What happens on December 21?**
   A. Fall equinox
   B. The afternoon sun will rise higher in the sky everyday until June
   C. The length of daylight gets shorter everyday until June

9. **What occurs on June 21 in the northern hemisphere?**
   A. the winter ends
   B. summer solstice
   C. summer equinox
   D. the shortest day of the year

10. **What season begins on March 21 in the northern hemisphere?**
    A. spring
    B. summer
    C. autumn
    D. March

DO NOT WRITE ON THIS TEST

11. **What do we experience when water vapor condenses and falls to the ground?**
    A. evaporation
    B. transpiration
    C. precipitation
    D. condensation

12. **What describes the amount of water molecules in the air compared to the total that could be in the air?**
    A. relative humidity
    B. evaporation
    C. dew point
    D. saturation

13. **What kind of weather is approaching if the barometer begins to rise** *(that is, the number goes up)***?**
    A. cloudy, warmer, and humid
    B. cloudy, cold, and dry
    C. sunny, cooler and drier
    D. storm

14. **<u>If air containing moisture is cooled</u>, the temperature at which air becomes saturated and condensation forms is known as _____.**
    A. rain
    B. dew point
    C. frost
    D. relative humidity

15. **What would make water drops form on a surface at night when the air is clear?**
    A. air near the ground is colder than the ground
    B. air is unsaturated
    C. the relative humidity decreases
    D. the air near the ground cools to the dew point temperature

16. **Why is cold air much <u>drier</u> than warm air?**
    A. As water molecules lose energy they condense and fall to the ground.
    B. The air is heavier.
    C. The sun heats the land and causes more evaporation.

17. **Why does Earth experience changes in the seasons?**
    A. Earth rotates on its axis
    B. the temperature of the sun changes
    C. Earth's axis is tilted as the planet revolves around the sun
    D. distance between Earth and the sun changes

18. **When the north pole is <u>tilted</u> toward the sun, North America will experience _____.**
    A. longer days & colder temperatures
    B. shorter days & warmth
    C. higher noon sun & warmth
    D. winter solstice

DO NOT WRITE ON THIS TEST

19. **When will moisture condense faster on a glass (*think of a juice can outside in July*)?**
    A. the air is humid & the glass is cold
    B. the air is dry & the glass is cold
    C. the air is humid & the glass is warm
    D. the air is dry & the glass is warm

20. **Wind is caused by differences in _____ and moves from _____.**
    A. dew point.....wet to dry
    B. humidity.....hot to cold
    C. air pressure.....high to low
    D. air pressure.....low to high

21. **What is air?**
    A. 21% Nitrogen, 60% Oxygen, 19% Carbon Dioxide
    B. 78% Nitrogen, 21% Oxygen, less than 1% Carbon Dioxide and 1-4% vapor
    C. 21% Nitrogen, 78% Oxygen, 1% Carbon Dioxide

22. **Heat energy is best described as:**
    A. something that's hot
    B. the ability of an object to expand
    C. how fast something boils
    D. movement or shaking of molecules

23. **If *low pressure* air approaches, the weather will become:**
    A. cloudier
    B. cooler
    C. drier
    D. more calm

Fill in the Blank: Complete each statement with the best answer and write that on your answer sheet. (1 pt. each)

24. A _____ forecasts the weather using data collected from many sources.

25. If there are 6 pounds of water vapor floating around the room and the air can hold a maximum of 10 pounds, the relative humidity is _____%.

26. The freezing point of water on the *Celsius* scale is _____ degrees.

27. Unequal heating of the atmosphere leads to differences in air _____, which causes wind.

28. Water condensing on the side of a cold can comes from where? (inside can or the air) ← *choose one*

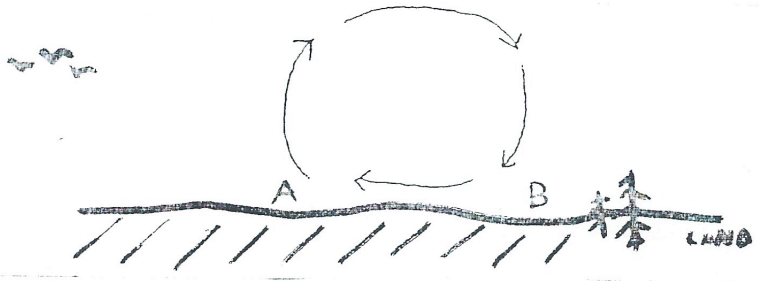
29. Imagine wind blowing on your wet skin. You feel cooler as the water molecules _____.

30. If the dew point is 30°F, and the temperature drops to the dew point, _____ forms.

31. If the relative humidity is 100% the air is _____, and fog, rain, or dew forms.

****DO NOT WRITE ON THIS TEST****

Convection Currents in Air: The following drawing shows the air moving above a land surface. The arrows show the direction of air movement.
Letters A and B are two different barometers spaced several miles apart.
(1 point each)



32. Which barometer would record the lowest air pressure?

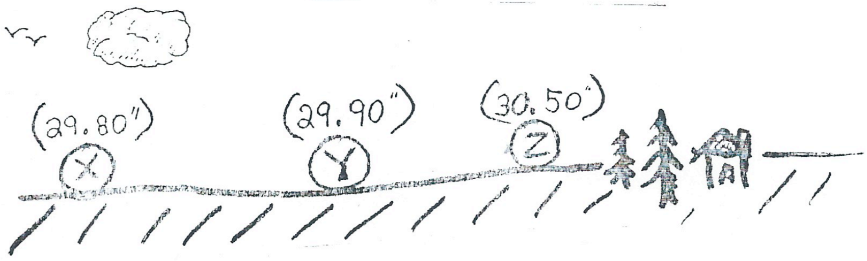
33. Where would *temperature* be the warmest?

34. Which way would the wind blow at the surface? (Choose A to B or B to A).

35. Which barometer station would most likely have clear skies over it?

Which Way will the Wind Blow?

The drawing shows 3 barometers (X, Y and Z) on a land surface. The units for each air pressure reading are inches of mercury. (1 pt. each)



36. Which barometer records the highest pressure? Choose **X** **Y** or **Z**

37. Which way does the wind blow between barometers X, Y, and Z?

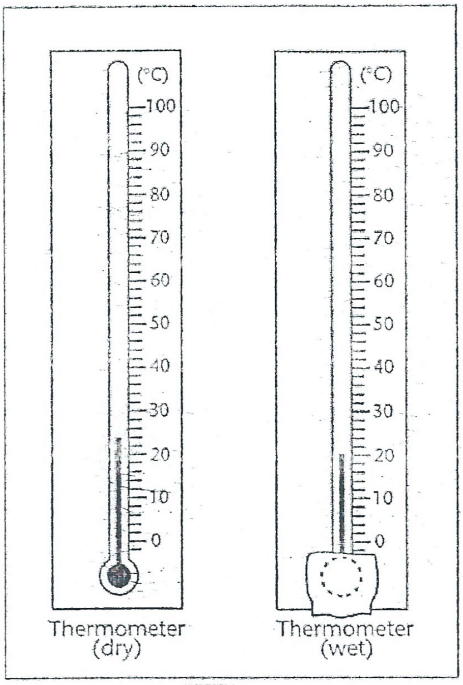
A. from X to Z
B. from Z to Y and from X to Y
C. from Z to X

38. The fastest wind is between barometers _____.

A. X and Y
B. Y and Z

****DO NOT WRITE ON THIS TEST****

Finding Relative Humidity: Use the thermometers and the chart below to answer the questions. Fill in answers on your answer sheet. (1 point each).



Dry-Bulb Reading (°C)	Difference Between Wet- and Dry-Bulb Readings (°C)				
	1	2	3	4	5
10	88	76	65	54	43
12	88	78	67	57	48
14	89	79	69	60	50
16	90	80	71	62	54
18	91	81	72	64	56
20	91	82	74	66	58
22	92	83	75	68	60
24	92	84	76	69	62
26	92	85	77	70	64
28	93	86	78	71	65
30	93	86	79	72	66

39. What is the temperature of the dry bulb thermometer?

40. What's the temperature of the wet bulb thermometer?

41. Based on the temperatures shown, what is the relative humidity of the air?

---

42. Extra Credit: Choose only **ONE** question below and answer it completely (multiple sentences). (3 pt.)
[Hint: it's a good idea to talk about molecules!]

- *When using a psychrometer to measure humidity, why does the temperature drop on the wet bulb?*
- *When walking from the top of a mountain to the bottom, what happens to the air pressure? Explain why this happens.*
- *How and why does dew form on grass?*

Name: [redacted]

OCEANOGRAPHY TEST
8th Grade Earth Science (total points)

True or False: Read each sentence below and write whether it is *"true"* or *"false"* on your answer sheet. (1 pt. each)

1. Water molecules must gain heat to change from a liquid to a gas. ____ 1
2. If a jar of ocean water completely evaporated, only air would be left in the jar. ____ 2
3. Coastal cities located near cold surface currents usually have dry climates. ____ 3
4. Hawaii is a volcanic island which is attached to the oceanic crust. ____ 4
5. El Niño can affect global climates. ____ 5

Multiple Choice: Read each question and write the letter of the *best* answer on your answer sheet. (1 pt. each)

6. **What process (or phase change) turns water from a gas to a liquid?**
   A. evaporation
   B. condensation
   C. precipitation

7. **What makes water molecules vibrate and shake?**
   A. cold energy
   B. heat energy
   C. gravity

8. **Water molecules that have a lot of heat energy would most likely:**
   A. evaporate
   B. condense
   C. do nothing

9. **Which of the following global systems do the oceans play a *major* role in ("affects the most)"?**
   A. climate
   B. geologic
   C. volcanic

10. **Which of the following scientists studied the oceans?**
    A. Carl Sagan
    B. Galileo Galilee
    C. Jacques Cousteau

11. **Which ocean does El Niño occur in?**
    A. Arctic
    B. Atlantic
    C. Indian
    D. Pacific

12. **Which ocean is the coldest?**
    A. Arctic
    B. Atlantic
    C. Indian
    [redacted]

13. **What is the *best* explanation for why that ocean in #13 is the coldest**
    A. the sun's angle is very low (never gets high in the sky) and doesn't heat the water much.
    [redacted].
    C. the water does not move.

14. **Which way do the Trade Winds blow near the equator?**
    A. north to south
    B. east to west
    C. west to east

15. **Which major wind belt moves surface currents towards the east in the North Atlantic and North Pacific?** (Remember that winds are named for where it comes from.)
    A. Trade winds
    B. Prevailing Westerlies
    C. Gulf Stream

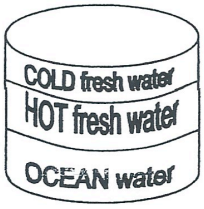
16. **What role does the Gulf Stream play in New York City's climate?**
    A. blows in pollution from the central United States
    B. increases humidity and precipitation levels
    C. causes severe droughts

17. **What is the amount of dissolved materials in ocean water called?**
    A. salivation
    B. salinity
    C. desalination

18. **What is the average amount of dissolved salts in ocean water?**
    A. 3.5%
    B. 50%
    C. 100%

19. **Which of the following jars accurately represents water density?**

A.


B.


C.


20. **What can create density currents in the oceans?**
A. differences between water temperatures
B. wind
C. similarities in the amount of dissolved salts

21. **Which process will *decrease* ocean water density (= lower salinity level)?**
A. freezing
B. evaporation
C. melting glaciers

22. **Which process will *increase* ocean water density** (= heavier water)**?**
A. rainfall or rivers
B. lower temperatures
C. both are correct

23. **What is the major benefit of upwelling currents?**
A. water vapor is added to the air making it rain in arid climates
[redacted]
C. cold, nutrient-filled waters support marine life.
D. it stops El Niño from occurring

24. **What would happen if warm ocean water moves into a zone of upwelling?**
A. the waters will mix, creating a good environment for fish
B. tsunamis would stretch out across the entire region
C. the warm water will sit on top of the upwelling stopping the nutrients from rising

---

Fill in the Blank: Complete each statement with the best answer and write that on your answer sheet. (1 pt. each)

25. A(n) _____ is a scientist that studies the oceans.

26. Oceans cover about _____ % of Earth's surface.

27. Ocean waters gain heat energy from (*not 'at'*) the _____.

28. Warm water _____ more quickly than cold water.

29. The oceans spin in large circular patterns called _____.

WORD BANK (*there are extra words*)

evaporates	50%	oceanographer	
waves	71%	condenses	
Gyres	93%	equator	sun

El Niño: Refer to the two photos on the overhead projector. (2 pt. each)

WHITE = warmest water **PURPLE = coldest water**

30. Which picture shows an *el Niño* event occurring?

31. In photo ***B***, describe the precipitation levels (rainy or dry) that occur in coastal South America?

32. In photo ***A***, describe the precipitation levels that occur in coastal South America?

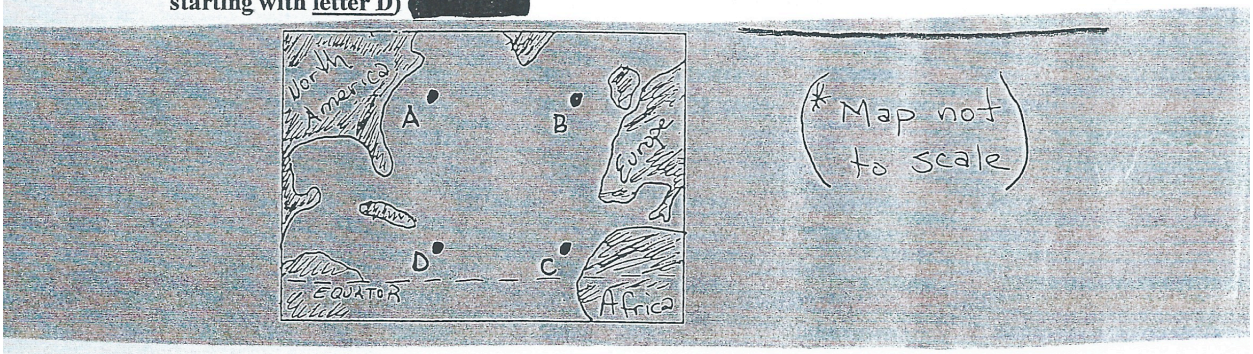
North Atlantic: The drawing below represents the North Atlantic Ocean. Each letter represents that specific location in the ocean. (1 pt. each)

33. At which letter is the *ocean water* most likely the **warmest**? _____

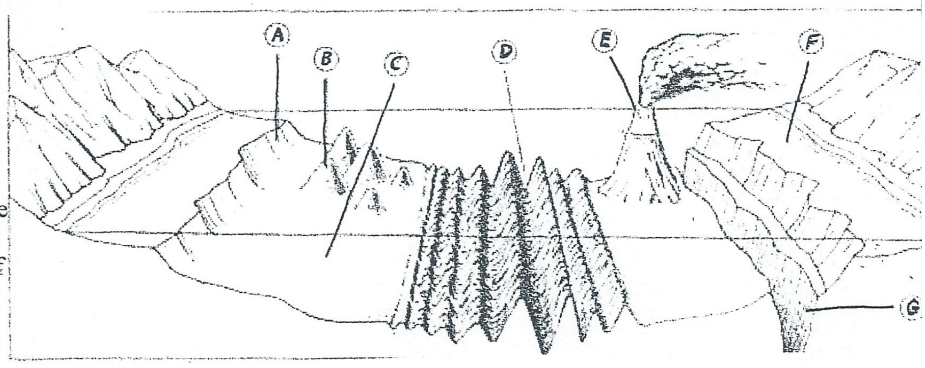
34. **Arid** conditions (dry) most likely occur on land near which letter? _____

35. The Gulf Stream is between which **2** letters? _____

36. A rubber duck fell in the water at letter D. What letters would it pass before arriving off the coast of Africa (letter C)? **(Write the correct order of the letters the duck will pass starting with letter D)** [redacted]



Sea-Floor Topography: The following diagram represents the bottom of the ocean floor. Match the letter with the appropriate term, and write it on your answer sheet. (1 pt. each)



_____ 37. seamount

_____ 38. abyssal plain

_____ 39. continental slope

_____ 40. continental shelf

_____ 41. volcanic island

MORE

OCEAN TEST

Extra Credit: (3 points)

How does El Niño form AND what are its impacts on weather in the *west* and *east* Pacific areas? *You may draw pictures to help support your answer.*

****DO NOT WRITE ON THIS TEST****

OCEANS TEST
8th Grade Earth Science (46 total points)

True or False: Read each sentence below and write whether it is *"true"* or *"false"* on your answer sheet. (1 pt. each)

1. Water molecules must gain heat to change from a liquid to a gas.
2. If a jar of ocean water completely evaporated, only air would be left in the jar.
3. Coastal cities located near cold surface currents usually have dry climates.
4. Hawaii is a volcanic island which is attached to the oceanic crust.
5. El Niño can affect global climates.

Multiple Choice: Read each question and write the letter of the *best* answer on your answer sheet. (1 pt. each)

6. **What process (or phase change) turns water from a gas to a liquid?**
   A. evaporation
   B. condensation
   C. salination
   D. precipitation

7. **What makes water molecules vibrate and shake?**
   A. rotation of Earth
   B. cold energy
   C. heat energy
   D. gravity

8. **Water molecules that have a lot of heat energy would most likely:**
   A. evaporate
   B. condense
   C. precipitate
   D. do nothing

9. **Which of the following global systems do the oceans play a *major* role in ("affects the most)"?**
   A. climate
   B. geologic
   C. gravitational
   D. volcanic

10. **Which of the following scientists studied the oceans?**
    A. Carl Sagan
    B. Galileo Galilee
    C. Sally Ride
    D. Jacques Cousteau

****DO NOT WRITE ON THIS TEST****

11. Which ocean does El Niño occur in?
A. Arctic
B. Atlantic
C. Indian
D. Pacific

12. What is the best explanation for the Indian Ocean being the *warmest* ocean?
A. it is regularly filled with upwelling currents.
B. el Niño regularly brings heated waters to the region.
C. most of it is located near the equator & heat is only distributed to one polar region.

13. Which ocean is the coldest?
A. Arctic
B. Atlantic
C. Indian
D. Pacific

14. What is the *best* explanation for why that ocean in #13 is the coldest
A. the sun's angle is very low (never gets high in the sky) and doesn't heat the water much.
B. the ice keeps the water from circulating.

15. Which way do the Trade Winds blow near the equator?
A. north to south
B. south to north
C. east to west
D. west to east

16. Which major wind belt moves surface currents towards the east in the North Atlantic and North Pacific? (Recall that winds are named for where it comes from.)
A. Trade winds
B. Prevailing Westerlies
C. Gulf Stream
D. Easterlies

17. What role does the Gulf Stream play in New York City's climate?
A. blows in pollution from the central United States
B. decreases temperatures
C. increases humidity and precipitation levels
D. causes severe droughts

18. What is the amount of dissolved materials in ocean water called?
A. salivation
B. salinity
C. desalination
D. salt

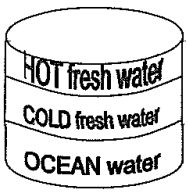
19. What is the average amount of dissolved salts in ocean water?
A. 0%
B. 3.5%
C. 50%
D. 100%

2

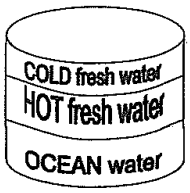
****DO NOT WRITE ON THIS TEST****

20. Imagine pouring different liquids into a fish tank. Which of the following scenarios would most likely occur?

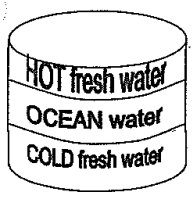
A.



B.



C.



21. What can create density currents in the oceans?
A. differences between water temperatures
B. wind
C. similarities in the amount of dissolved salts
D. all of these are correct

22. Which process will *decrease* ocean water density?
A. reduced solar energy
B. freezing
C. evaporation
D. melting glaciers

23. Which process will *increase* ocean water density?
A. rainfall or rivers
B. evaporation
C. higher temperatures
D. all of these are correct

24. What is the major benefit of upwelling currents?
A. water vapor is added to the air making it rain in arid climates
B. killer waves, dude
C. cold, nutrient-filled waters support marine life.
D. it stops El Niño from occurring

25. What would happen if warm ocean water moves into a zone of upwelling?
A. the waters will mix, creating a good environment for fish
B. tsunamis would stretch out across the entire region
C. the warm water will sit on top of the upwelling stopping the nutrients from rising
D. the upwelling current will not be affected by the warmer water

---

Fill in the Blank: Complete each statement with the best answer and write that on your answer sheet. (1 pt. each)

26. A(n) _____ is a scientist that studies the oceans.

27. Oceans cover about _____ % of Earth's surface.

28. Ocean waters gain heat from (*not 'at'*) the _____.

29. Warm water _____ more quickly than cold water.

30. The oceans spin in large circular patterns called _____ .

3

DO NOT WRITE ON THIS TEST

El Niño: Refer to the two photos on the overhead projector. (1 pt. each)
WHITE = warmest water PURPLE/Pinkish = coldest water

31. Which picture shows an *el Niño* event occurring?

32. In photo ***B***, describe the precipitation levels (rainy or dry) that occur in coastal South America?

33. In photo ***A***, describe the precipitation levels that occur in coastal South America?

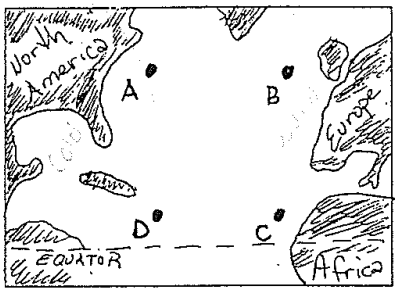
North Atlantic: The drawing below represents the North Atlantic Ocean. Each letter represents that specific location in the ocean. (1 pt. each)

34. At which letter is the *ocean water* most likely the **warmest**?

35. **Arid** conditions (dry) most likely occur on land near which letter?

36. The Gulf Stream is between which **2** letters?

37. A rubber duck fell in the water at letter D. What letters would it pass before arriving off the coast of Africa (letter C)? **(Write the correct order of the letters the duck will pass starting with letter D)** [redacted]



(*Map not to scale)

Sea-Floor Topography: The following diagram represents the bottom of the ocean floor. Match the letter with the appropriate term, and write it on your answer sheet. (1 pt. each)

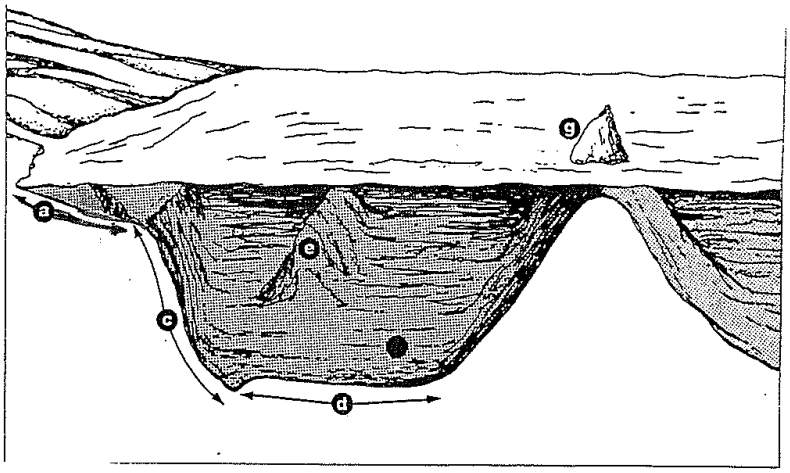
38. seamount

39. abyssal plain

40. continental slope

41. continental shelf

42. volcanic island



Name: _____ Class: _____ Date: _____ TEST A

Weather TEST

Multiple Choice
Identify the letter of the choice that best completes the statement or answers the question.

____ 1. A _____ is a large, swirling, low-pressure system that forms over tropical oceans.
a. blizzard
b. hurricane
c. tornado
d. sea breeze

____ 2. _____ is the state of the atmosphere at a specific place and time and includes air pressure, wind, temperature, and moisture in the air.
a. Weather
b. Precipitation
c. Air pressure
d. Humidity

____ 3. The _____ causes Earth's seasons
a. distance from the sun
b. tilt of the Earth
c. distance from the moon
d. rotation of the Earth

____ 4. High, thin, white, feathery clouds made of ice crystals are called _____ clouds.
a. stratus
b. cumulus
c. nimbus
d. cirrus

____ 5. The instrument used to measure air pressure is a _____.
a. barometer
b. anemometer
c. thermometer
d. psychrometer

____ 6. Temperature measures air molecule movement. When the molecules move slowly, the temperature is _____.
a. hot
b. warm
c. cold
d. changing

____ 7. Smooth, even sheets or layers at low altitudes are called _____ clouds.
a. cumulus
b. cirrus
c. stratus
d. nimbus

____ 8. A _____ front is when cold air pushes under warm air.
a. warm
b. occluded
c. cold
d. stationary

____ 9. The equator receives _____ radiation than the north and south poles.
a. less
b. more
c. no
d. an equal amount of

____ 10. _____ clouds are very dark and full of water.
a. Nimbus
b. Cumulus
c. Stratus
d. Cirrus

____ 11. Puffy, white clouds with flat bases are called _____ clouds.
a. cirrus
b. cumulus
c. stratus
d. nimbus

____ 24. _____ are lines connecting areas of equal pressure
a. pressure points
b. barometers
c. isobars
d. isotherms

Completion
Complete each sentence or statement.

Word bank

volcanic eruptions	**front**	**stormy**
cold	**warm**	**air mass**
lightning	**precipitation**	**warm**
climate		

25. _____ air can hold more water vapor.

26. An _____ is a large body of air with properties like the part of the Earth's surface over which it formed.

27. A _____ is a boundary between two air masses.

28. _____ is the pattern of weather that occurs in an area over many years.

29. Low pressure areas are associated with _____ weather.

30. _____ is water falling from clouds. Air temperature determines whether the droplets form rain, snow, sleet, or hail.

31. Climate change is caused by solar radiation blocked by solid or liquid particles. Solar radiation can be blocked out by _____, meteorite collisions, or pollution.

32. _____ occurs when the movement of air inside a storm clouds causes parts of the cloud to become oppositely charged.

33. A _____ front is when warm air pushes over cold air and moves the cold air to another area.

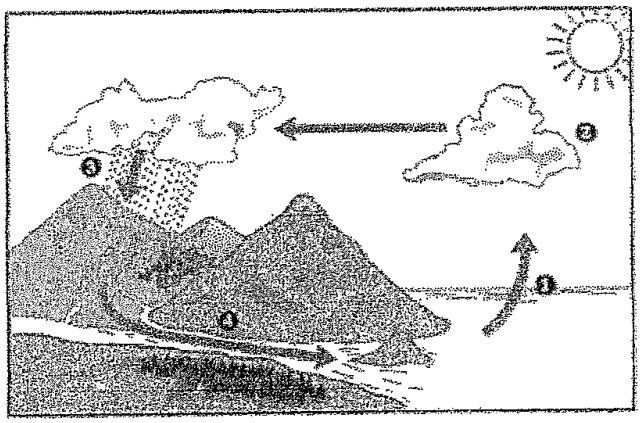
34. When a cold front moves into an area, the air that is directly behind the cold front would be _____.

Name: _____ ID: A

Short Answer

35. Label the water cycle: **Your choices are: precipitation, evaporation, runoff, and condensation.**

1. _____
2. _____
3. _____
4. _____



36. Why is the ozone layer important?

_____
_____
_____
_____

37. How do clouds form?

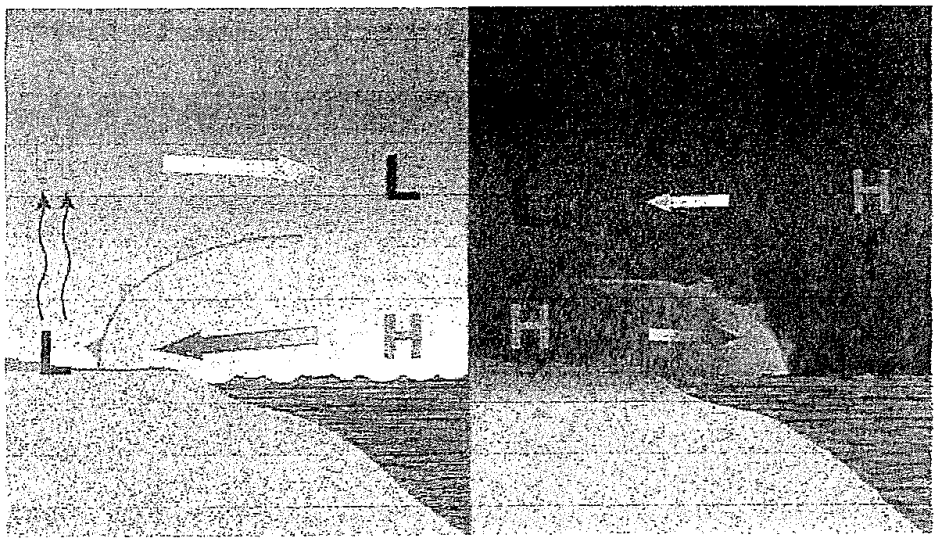
_____
_____
_____
_____

38. What powers the water cycle?

_____
_____

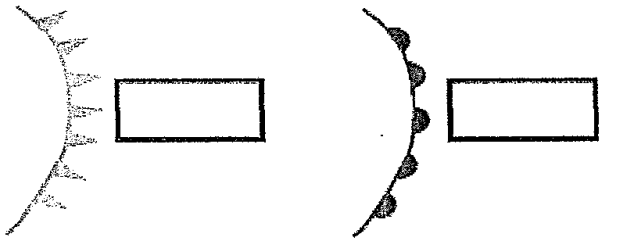
Name: _____ ID: A

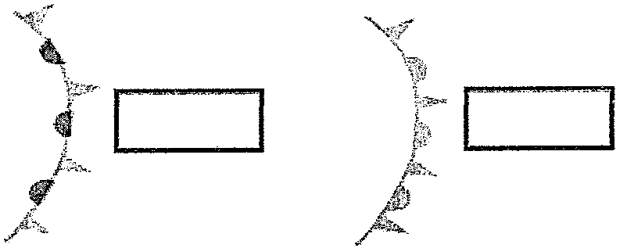
39. Label which picture is a sea breeze and which is a land breeze:



_____ _____

40. Label the types of fronts:





modified

Name: _____ Class: _____ Date: _____ **TEST B**

Weather TEST

Multiple Choice
Identify the letter of the choice that best completes the statement or answers the question.

____ 1. A _____ is a large, swirling, low-pressure system that forms over tropical oceans.
a. blizzard
b. sea breeze
c. hurricane

____ 2. _____ is the state of the atmosphere at a specific place and time and includes air pressure, wind, temperature, and moisture in the air.
a. Air pressure
b. Weather
c. Precipitation

____ 3. The _____ causes Earth's seasons
a. distance from the moon
b. rotation of the Earth
c. tilt of the Earth

____ 4. High, thin, white, feathery clouds made of ice crystals are called _____ clouds.
a. stratus
b. cirrus
c. cumulus

____ 5. The instrument used to measure air pressure is a _____.
a. anemometer
b. psychrometer
c. barometer

____ 6. Temperature measures air molecule movement. When the molecules move slowly, the temperature is _____.
a. cold
b. hot
c. changing

____ 7. Smooth, even sheets or layers at low altitudes are called _____ clouds.
a. cumulus
b. stratus
c. cirrus

____ 8. A _____ front is when cold air pushes under warm air.
a. stationary
b. cold
c. occluded

____ 9. The equator receives _____ radiation than the north and south poles.
a. more
b. less
c. no

____ 10. _____ clouds are very dark and full of water.
a. Cirrus
b. Stratus
c. Nimbus

____ 11. Puffy, white clouds with flat bases are called _____ clouds.
a. cumulus
b. stratus
c. nimbus

____ 12. High pressure areas are associated with what type of weather?
a. stormy
b. windy
c. fair

____ 13. Air moves from _____.
a. low pressure to high pressure
b. none of the above
c. high pressure to low pressure

____ 14. The _____ is the movement of air and water due to the rotation of the Earth.
a. Coriolis effect
b. humidity
c. weather

____ 15. The atmospheric pressure is higher _____ earth's surface.
a. under
b. pressure is equal everywhere
c. closer to

____ 16. _____ occur inside warm, moist air masses and at fronts.
a. dew
b. nimbus clouds
c. thunderstorms

____ 17. The _____ is the layer of charged particles which helps to carry radio waves.
a. ionosphere
b. troposphere
c. exosphere

____ 18. _____ occurs when pollutants are mixed with other chemicals.
a. Smog
b. UV poisoning
c. Atmospheric pressure

____ 19. The atmosphere is made up of 78% _____.
a. nitrogen
b. helium
c. carbon dioxide

____ 20. _____ is the amount of water vapor in the air.
a. Humidity
b. Cold front
c. Precipitation

____ 21. Which layer of the atmosphere is closest to the earth?
a. mesosphere
b. troposphere
c. exosphere

____ 22. A _____ is a winter storm with strong winds, cold temperatures, and low visibility that lasts more than three hours.
a. blizzard
b. tornado
c. pollution

____ 23. A _____ is a violent, whirling wind that moves in a narrow path over land.
a. tornado
b. hurricane
c. blizzard

____ 24. _____ are lines connecting areas of equal pressure
a. pressure points
b. isobars
c. isotherms

Completion Part 1
Complete each sentence or statement.

Word bank
front **stormy** **warm**
air mass **climate**

25. _____ air can hold more water vapor.

26. An _____ is a large body of air with properties like the part of the Earth's surface over which it formed.

27. A _____ is a boundary between two air masses.

28. _____ is the pattern of weather that occurs in an area over many years.

29. Low pressure areas are associated with _____ weather.

Completion Part 2
Complete each sentence or statement.

Word bank
volcanic eruptions **cold** **lightning**
precipitation **warm**

30. _____ is water falling from clouds. Air temperature determines whether the droplets form rain, snow, sleet, or hail.

31. Climate change is caused by solar radiation blocked by solid or liquid particles. Solar radiation can be blocked out by _____, meteorite collisions, or pollution.

32. _____ occurs when the movement of air inside a storm clouds causes parts of the cloud to become oppositely charged.

33. A _____ front is when warm air pushes over cold air and moves the cold air to another area.

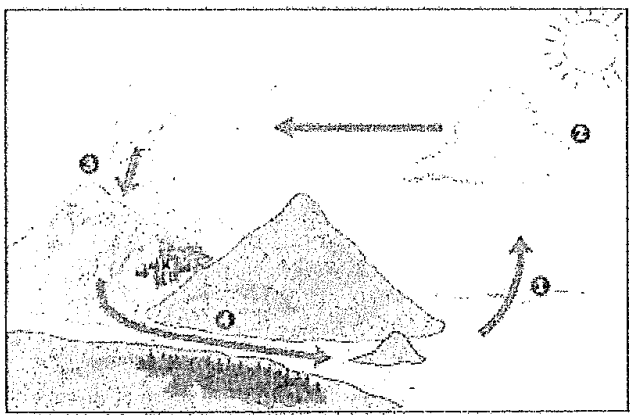
34. When a cold front moves into an area, the air that is directly behind the cold front would be _____.

Name: _____ ID: A

Short Answer

35. Label the water cycle: **Your choices are: precipitation, evaporation, runoff, and condensation.**

1. _____
2. _____
3. _____
4. _____



36. Why is the ozone layer important?

_____
_____
_____
_____

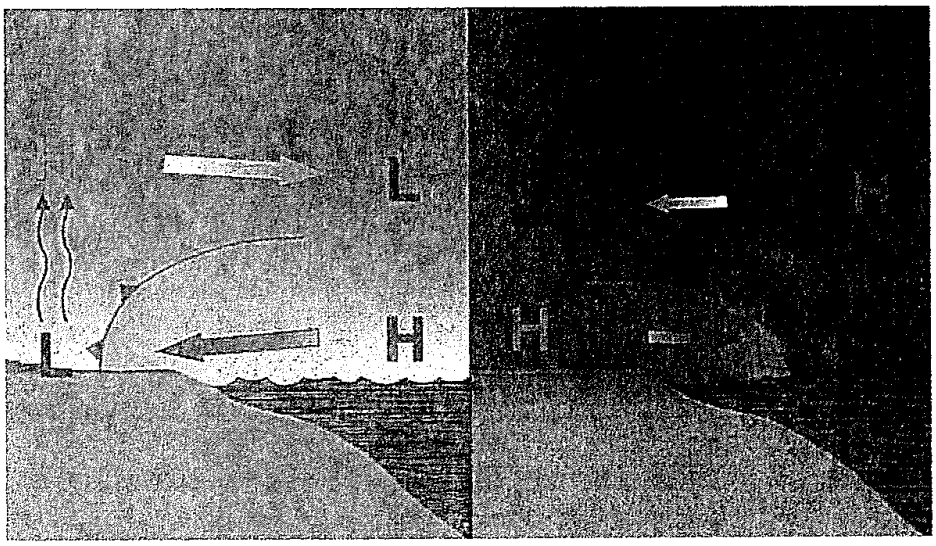
37. How do clouds form?

_____
_____
_____
_____

38. What powers the water cycle?

_____
_____

39. Label which picture is a sea breeze and which is a land breeze:



_____ _____

40. Label the types of fronts: **Your choices are: stationary, warm, occluded, and cold.**